McCARTHY

SMITHGROUP JJR

SUBMITTAL APPROVAL PAGE

University of California - Merced

Project: Science and Engineering 2 Building
UCM Job # 900020

PREPARER APPROVAL (PTC)	McCARTHY APPROVAL
SPECIFICATION SECTION 16460 PAGE NO. 16460-2 PARAGRAPH NO. 1.4 APPROVED FOR SUBMISSION BY: [signature] DATE: 4/7/2014	A. Approved as noted for Architectural Review ☐ B. Revise & Resubmit ☐ C. Rejected ☐ This review is for general conformance with Plans and Specifications only. Any deviations from same not clearly noted by the Preparer have not been reviewed. Review shall not constitute a complete check of detailed dimensions or count or serve to relieve the Preparer of contractual responsibility for any error or deviation from contract requirements. McCARTHY By _____ Date _____ SUBMITTAL REFERENCE NO. _____
SMITHGROUP JJR APPROVAL	**ENGINEER APPROVAL**

EXHIBIT 23
MATERIAL SUBMITTAL APPROVAL FORM

(SEE INSTRUCTIONS ON PAGE 2)

TO:	FROM: (Prime Trade Contractor)		DATE:
UNIVERSITY OF CALIFORNIA, MERCED	**HELIX ELECTRIC, INC**		**4-07-14**
CONTRACT NUMBER: **900020**	SUBMITTAL NUMBER: **076**	PREVIOUS SUBMITTAL NUMBER: **075**	SUBMITTAL: [X] NEW [ ] RESUBMITTAL

		TO BE COMPLETED BY PRIME TRADE CONTRACTOR	**FOR UNIVERSITY'S USE ONLY**			
ITEM NO.	SPECIFICATION SECTION/PARA NO./DRAWING NO.	**DESCRIPTION OF MATERIAL/SHOP DRAWINGS** (Includes Type, Model No., Catalog No., Mfg., etc.)	Approved	Dis-Approved	SEE COMMENTS	INITIAL
A	16460-1.4-Operation and Maintenance Manual	Dry Type Transformers O&M Manual				
B						
C						

NOTE By completing this form the undersigned Contractor certifies that the material and shop drawings complies with all drawings and specifications of subject contract and the Contractor has reviewed submittal procedures specified in division 1. Checking is for general conformance with the design concept only. Reviews are subject to all contract requirements. No contract requirements are waived unless specifically noted. Contractor is responsible for identifying all proposed material substitutions, dimensions, quantities, techniques of construction and coordination with all other trades.

DATE	TYPE OR PRINT NAME AND TITLE	SIGNATURE
4/07/2014	Michael Gardner, Project Engineer	

FOR UNIVERSITY'S USE ONLY

TO: (Contractor)

[ ] Approved [ ] Disapproved

As indicated Above and Subject to Any Applicable Comments on the Reverse Side. Request Resubmittal on Disapproved items within _____ Days of Date Shown Below.

DATE	TYPE OR PRINT NAME AND TITLE	SIGNATURE

COMMENTS (NUMBER TO CORRESPOND WITH APPLICABLE ITEM NUMBER ON PAGE 1)

INSTRUCTIONS TO CONTRACTORS

1. The term "material" is defined as articles, supplies, raw materials, equipment, parts, components, and items that are to be incorporated into the work required by the contract.
2. This form is to be used by Contractors for submitting Shop Drawings, Equipment Data, Manufacturer's Literature and Certificates and Samples of Materials to the University for approval in accordance with the provisions of this contract. Submit the number of copies which the Contractor requires, plus 3 copies which will be retained by the University.
3. Item(s) to be approved will be clearly tabbed or identified. Data pertaining to item(s) to be approved will be clearly identified or tabbed, particularly where documents are voluminous, in order to properly evaluate the materials or articles to be incorporated in the work. Each attachment will be numbered to correspond with the item number shown on the face of this form.
4. Requests submitted shall be numbered consecutively, by contract, in the space entitled "Submittal No." this number, in addition to the Contract No., will be used to identify each Material Approval Submittal. ReSubmittals will be indicated in the appropriate block and the insertion of previous Submittal number and date in addition to a new Submittal number. A single Submittal should be used for all work of a section of the specifications, but in NO instance should the Submittal include work for more than 1 contract. Submittals requiring priority handling will be submitted by separate submittal using the form and so marked across the face of the form.
5. Materials Substitutions Requests: Contractor shall check the block provided if a proposed material substitution is being submitted. Requests for materials and equipment substitutions will not be accepted unless Contractor complies with directions specified in Section 01630 Product Options and Substitutions.
6. This material Approval Submittal is not valid unless it is signed by the University's Representative.

Helix Electric, Inc.
Constructors Engineers

Science and Engineering Building 2

PROJECT # 900020

HEI JOB # 201202

SUBMITTAL REGARDING:

Division 16

Spec Section 16460

Dry Type Transformers

Operation & Maintenance Manual

Helix Submittal # 076

Helix Electric Inc.
Date: 4/7/2014
Revision 0

HELIX ELECTRIC
CONSTRUCTORS • ENGINEERS

Operating and Maintenance
Dry Type Transformers – 16460

Name & Address of Site Project:	University of California Merced Science and Engineering Building II 5200 N. Lake Road Merced, CA 95343
General Contractor:	McCarthy 2241 Douglas Blvd, Suite 200 Roseville, CA 95661 (916) 786-3833
Cross Reference Manuals:	Dry Type Transformers - 16460

HELIX ELECTRIC
CONSTRUCTORS • ENGINEERS

Operating and Maintenance
Dry Type Transformers – 16460

Contact Information

CED

5457 Ruffin Road
San Diego, CA 92123
Tel: (858) 268-1020 Fax: (858) 974-6372

UC Merced Science Bldg

Operation & Maintenance Manual

General Order
MSR0005766
Volume 1 of 1

Equipment:

Dry Type Transformers
Spec Section 16460

Manufacturer:
Eaton Corp.
1741 E Roseville PWY #400
Roseville, CA 95661
Tel: 916-780-4110

Distributor:
Consolidated Elec. Dist.
5457 Ruffin Rd
San Diego, CA 92123
Tel: 858-268-1020

Electrical Contractor:
Helix Electric
6795 Flanders Drive
San Diego, CA 92121
Tel: 858-535-0505

CONSOLIDATED ELECTRIC PO# 7125-KE970200D
HELIX ELECTRIC INC

Date: 2/24/2014

©2013 Eaton Corporation, All Rights Reserved

Main Table of Contents

Contact Page
Warranty Information
1.0 Spec Section 16460 - Dry Type Transformers Vol. 1
1.1 Drawings
1.2 Test Reports
1.3 Instruction Data
1.4 Seismic Information

Contact Information

Visit our Web Site http://www.eatonelectrical.com to view the on-line catalog, pricing, document support, distribution directory, news and events.

For warranty support	**877-ETNCARE**
For a general directory of Eaton Electrical products	**(800) 268-3578**
For on-site field service, commissioning & maintenance	**(800) 461-9166**

Cutler-Hammer Engineering Services and Systems

ENGINEERING SERVICES

Cutler-Hammer offers an extensive array of Engineering Services and Systems as outlined in this brochure.

(General Services Below / Comprehensive List on the following page).

For additional information on Cutler-Hammer Engineering Services contact your Project Engineer or visit our website www.cutler-hammer.com

For 24 hour 7 day a week emergency engineering service call: 1-800-498-2678

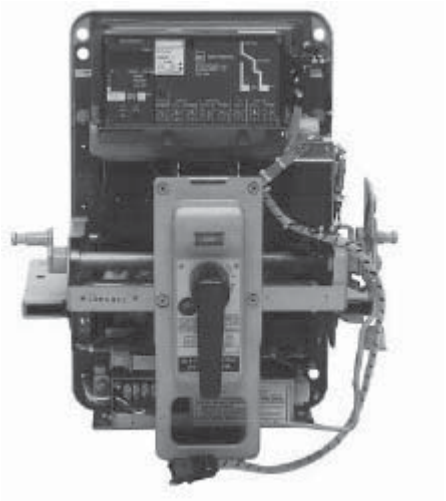
For additional information on Cutler-Hammer Engineering Services contact your Project Engineer or visit our website www.cutler-hammer.com

Startup, Commissioning and Maintenance

- Installation Support and Supervision
- ***Acceptance Testing***
- ***Commissioning and Energizing***
- ***Startup, Training and Warranty Support***
- ***Exclusive Cutler-Hammer Products 2-Year Warranty***
- ***Ground-Fault Certifications***
- Ground-Grid Testing
- Cable Testing and Fault Identification
- Relay Testing and Calibration
- PM Program Design and Implementation
- Thermograph Surveys
- Oil Processing
- Predictive, Preventive Maintenance and Troubleshooting
  -Partial Discharge
  -VibroAcoustics
  -Transformers and Tap Changers
  -High Voltage Systems
  -Substations MV / LV
  -Relay Systems
  -Automatic Transfer Schemes
  -Battery Systems
  -LV / MV Breakers
  -Motors
  -SF6, OCB, WLI Components
  -Network Protectors
  -MCC and Molded Case Breakers
- Drive Systems
- PLC / Control Systems
- Nuclear Class 1E Safety-Related Field Service

Electrical System Modernization

- Switchgear Bus MVA Upgrading
- Bus Insulation Systems
- MV Vacuum Breaker Roll-in Replacements
- LV Breaker Replacement
- LV and MV Motor Starting Upgrades
- LV Breaker (all OEMs) Trip System Upgrades – Digitrip
- MV and LV Cell Retrofits
- Molded Case Breaker Upgrades
- Motor Control Center (MCC) Buckets Upgrades
- Protection, Metering and communications
  -LV Breakers: Digitrip / IMPACC / PowerNet
  -Overload Protection: MP3000
  -Metering Systems: IQ Family
  -IMPACC / PowerNet Implementation
  -Harmonic Measurement
- Power Factory Control and Correction (Filtered)
- Ground Fault Detection Systems
- Surge / Lightning Protection Systems
- Automatic Transfer Scheme Upgrades
- Network Protector Service / Relaying Systems
- High Resistance Grounding and Detection
- Generator Voltage Regulation
- Generator Static Excitation Systems
- Cogeneration Switchgear Interface Relaying
- Reduced Voltage / Soft Starters
- Drive / PLC System Upgrades
- Synchronous Field Application Upgrades

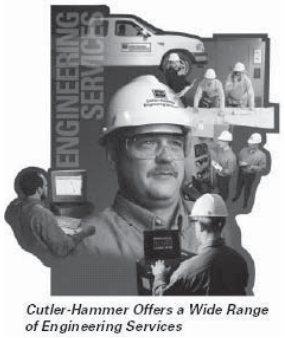


Circuit Breaker Specialized Services

- LV and MV Replacement Breakers
- LV Retrofits (All OEM's: Digitrip RMS Kits)
- LV and MV Recondition and Remanufacture
- MCC Recondition and Remanufacture
- Network Protector Service
- Navy Shipboard Breakers
- Nuclear Safety Related 1E Circuit Breakers

Manufacturer's Equipment Serviced

- Cutler-Hammer
- Westinghouse
- Square D
- General Electric
- ITE / BBC / ABB
- Federal Pacific and Others
- Obsolete Equipment



Cutler-Hammer Offers a Wide Range of Engineering Services

Warranty Information

Supersedes Selling Policy 25-000, Pages 1-4, dated **February 20, 2006**

DOMESTIC U.S.A. GENERAL TERMS AND CONDITIONS OF SALE

Distribution and Control Products and Services 25-000

TERMS AND CONDITIONS OF SALE

The Terms and Conditions of Sale set forth herein, and any supplements which may be attached hereto, constitute the full and final expression of the contract for the sale of products or services (hereinafter referred to as Product(s) or Services by Eaton Corporation (hereinafter referred to as Seller) to the Buyer, and supersedes all prior quotations, purchase orders, correspondence or communications whether written or oral between the Seller and the Buyer. Notwithstanding any contrary language in the Buyer's purchase order, correspondence or other form of acknowledgment, Buyer shall be bound by these Terms and Conditions of Sale when it sends a purchase order or otherwise indicates acceptance of this contract, or when it accepts delivery from Seller of the Products or Services. THE CONTRACT FOR SALE OF THE PRODUCTS OR SERVICES IS EXPRESSLY LIMITED TO THE TERMS AND CONDITIONS OF SALE STATED HEREIN. ANY ADDITIONAL OR DIFFERENT TERMS PROPOSED BY BUYER ARE REJECTED UNLESS EXPRESSLY AGREED TO IN WRITING BY SELLER. No contract shall exist except as herein provided.

Complete Agreement
No amendment or modification hereto nor any statement, representation or warranty not contained herein shall be binding on the Seller unless made in writing by an authorized representative of the Seller. Prior dealings, usage of the trade or a course of performance shall not be relevant to determine the meaning of this contract even though the accepting or acquiescing party had knowledge of the nature of the performance and opportunity for objection.

Quotations
Written quotations are valid for 30 days from its date unless otherwise stated in the quotation or terminated sooner by notice.

Verbal quotations, unless accepted, expire the same day they are made.

A complete signed order must be received by Seller within 20 calendar days of notification of award, otherwise the price and shipment will be subject to re-negotiation.

Termination and Cancellation
Any order may be terminated by the Buyer only by written notice and upon payment of reasonable termination charges, including all costs plus profit.

Seller shall have the right to cancel any order at any time by written notice if Buyer breaches any of the terms hereof, becomes the subject of any proceeding under state or federal law for the relief of debtors, or otherwise becomes insolvent or bankrupt, generally does not pay its debts as they become due or makes an assignment for the benefit of creditors.

Prices
All prices are subject to change without notice. In the event of a price change, the effective date of the change will be the date of the new price or discount sheet, letter or telegram. All quotations made or orders accepted after the effective date will be on the new basis. For existing orders, the price of the unshipped portion of an order will be the price in effect at time of shipment.

Price Policy – Products and Services
When prices are quoted as firm for quoted shipment, they are firm provided the following conditions are met:

1. The order is released with complete engineering details.
2. Shipment of Products are made, and Services purchased are provided within the quoted lead time.
3. When drawings for approval are required for any Products, the drawings applicable to those Products must be returned within 30* calendar days from the date of the original mailing of the drawings by Seller. The return drawings must be released for manufacture and shipment and must be marked "APPROVED" or "APPROVED AS NOTED." Drawing re-submittals which are required for any other reason than to correct Seller errors will not extend the 30-day period.

If the Buyer initiates or in any way causes delays in shipment, provision of Services or return of approval drawings beyond the periods stated above, the price of the Products or Services will be increased 1% per month or fraction thereof up to a maximum of 18 months from the date of the Buyer's order. For delays resulting in shipment or provision of Services beyond 18 months from the date of the Buyer's order, the price must be renegotiated.

Price Policy – BLS
Refer to Price Policy 25-050.

Minimum Billing
Orders less than $1,000 will be assessed a shipping and handling charge of **5%** of the price of the order, with a minimum charge of $25.00 unless noted differently on Product discount sheets.

Taxes
The price does not include any taxes. Buyer shall be responsible for the payment of all taxes applicable to, or arising from, the transaction, the Products, its sale, value or use, or any Services performed in connection therewith regardless of the person or entity actually taxed.

TERMS OF PAYMENT

Products
Acceptance of all orders is subject to the Buyer meeting Seller's credit requirements. Terms of payment are subject to change for failure to meet such requirements. Seller reserves the right at any time to demand full or partial payment before proceeding with a contract of sale as a result of changes in the financial condition of the Buyer. Terms of Payment are either Net 30 days from the date of invoice of each shipment or carry a cash discount based on Product type. Specific payment terms for Products are outlined in the applicable Product discount schedules.

Services
Terms of payment are net within 30 days from date of invoice for orders amounting to less than $50,000.00.

* 60 days for orders through contractors to allow time for their review and approval before and after transmitting them to their customers.

Terms of payment for orders exceeding $50,000.00 shall be made according to the following:

1. Twenty percent (20%) of order value with the purchase order payable 30 days from date of invoice.
2. Eighty percent (80%) of order value in equal monthly payments over the performance period payable 30 days from date of invoice.

Except for work performed (i) under a firm fixed price basis or (ii) pursuant to terms of a previously priced existing contract between Seller and Buyer, invoices for work performed by Seller shall have added and noted on each invoice a charge of 3% (over and above the price of the work) which is related to Seller compliance with present and proposed environmental, health and safety regulations associated with prescribed requirements covering hazardous materials management and employee training, communications, personal protective equipment, documentation and record keeping associated therewith.

Adequate Assurances
If, in the judgment of Seller, the financial condition of the Buyer, at any time during the period of the contract, does not justify the terms of payment specified, Seller may require full or partial payment in advance.

Delayed Payment
If payments are not made in accordance with these terms, a service charge will, without prejudice to the right of Seller to immediate payment, be added in an amount equal to the lower of 1.5% per month or fraction thereof or the highest legal rate on the unpaid balance.

Freight
Freight policy will be listed on the Product discount sheets, or at option of Seller one of the following freight terms will be quoted.

F.O.B. – P/S – Frt./Ppd. and Invoiced
Products are sold F.O.B. point of shipment freight prepaid and invoiced to the Buyer.

F.O.B. – P/S – Frt./Ppd. and Allowed
Products sold are delivered F.O.B. point of shipment, freight prepaid and included in the price.

F.O.B. Destination – Frt./Ppd. and Allowed
At Buyer's option, Seller will deliver the Products F.O.B. destination freight prepaid and 2% will be added to the net price. The term "freight prepaid" means that freight charges will be prepaid to the accessible common carrier delivery point nearest the destination for shipments within the United States and Puerto Rico unless noted differently on the Product discount sheets. For any other destination, contact Seller's representative.

Shipment and Routing
Seller shall select the point of origin of shipment, the method of transportation, the type of carrier equipment and the routing of the shipment.

If the Buyer specifies a special method of transportation, type of carrier equipment, routing or delivery requirement, Buyer shall pay all special freight and handling charges.

When freight is included in the price, no allowance will be made in lieu of transportation if the Buyer accepts shipment at factory, warehouse or freight station or otherwise supplies its own transportation.

Risk of Loss
Risk of loss or damage to the Products shall pass to Buyer at the F.O.B. point.

Concealed Damage
Except in the event of F.O.B. destination shipments, Seller will not participate in any settlement of claims for concealed damage.

When shipment has been made on an F.O.B. destination basis, the Buyer must unpack immediately and, if damage is discovered, must:

1. Not move the Products from the point of examination.
2. Retain shipping container and packing material.
3. Notify the carrier in writing of any apparent damage.
4. Notify Seller representative within 72 hours of delivery.
5. Send Seller a copy of the carrier's inspection report.

Witness Tests/Customer Inspection
Standard factory tests may be witnessed by the Buyer at Seller's factory for an additional charge calculated at the rate of $2,500 per day (not to exceed eight (8) hours) per Product type. Buyer may final inspect Products at the Seller's factory for $500 per day per Product type.

Witness tests will add one (1) week to the scheduled shipping date. Seller will notify Buyer fourteen (14) calendar days prior to scheduled witness testing or inspection. In the event Buyer is unable to attend, the Parties shall mutually agree on a rescheduled date. However, Seller reserves the right to deem the witness tests waived with the right to ship and invoice Products.

Held Orders
For any order held, delayed or rescheduled at the request of the Buyer, Seller may, at its sole option, (1) require payment to be based on any reasonable basis, including but not limited to the contract price, and any additional expenses, or cost resulting from such a delay; (2) store Products at the sole cost and risk of loss of the Buyer; and/or (3) charge to the Buyer those prices under the applicable price policy. Payment for such price, expenses and costs, in any such event, shall be due by Buyer within thirty (30) days from date of Seller's invoice. Any order so held delayed or rescheduled beyond six (6) months will be treated as a Buyer termination.

Drawing Approval
Seller will design the Products in line with, in Seller's judgment, good commercial practice. If at drawing approval Buyer makes changes outside of the design as covered in their specifications, Seller will then be paid reasonable charges and allowed a commensurate delay in shipping date based on the changes made.

Drawing Re-Submittal
When Seller agrees to do so in its quotation, Seller shall provide Buyer with the first set of factory customer approval drawing(s) at Seller's expense. The customer approval drawing(s) will be delivered at the quoted delivery date. If Buyer requests drawing changes or additions after the initial factory customer approval drawing(s) have been submitted by Seller, the Seller, at its option, may assess Buyer drawing charges**.** Factory customer approval drawing changes required due to misinterpretation by Seller will be at Seller's expense. Approval drawings generated by Bid-Manager are excluded from this provision.

WARRANTY

Warranty For Products
Seller warrants that the Products manufactured by it will conform to Seller's applicable specifications and be free from failure due to defects in workmanship and material for one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

In the event any Product fails to comply with the foregoing warranty Seller will, at its option, either (a) repair or replace the defective Product, or defective part or component thereof, F.O.B. Seller's facility freight prepaid, or (b) credit Buyer for the purchase price of the Product. All warranty claims shall be made in writing.

Seller requires all non-conforming Products be returned at Seller's expense for evaluation unless specifically stated otherwise in writing by Seller.

This warranty does not cover failure or damage due to storage, installation, operation or maintenance not in conformance with Seller's recommendations and industry standard practice or due to accident, misuse, abuse or negligence. This warranty does not cover reimbursement for labor, gaining access, removal, installation, temporary power or any other expenses, which may be incurred in connection with repair or replacement.

This warranty does not apply to equipment not manufactured by Seller. Seller limits itself to extending the same warranty it receives from the supplier.

Extended Warranty for Products
If requested by the Buyer and specifically accepted in writing by Seller, the foregoing standard warranty for Products will be extended from the date of shipment for the period and price indicated below:

24 months – 2% of Contract Price
30 months – 3% of Contract Price
36 months – 4% of Contract Price

Special Warranty (In and Out) for Products
If requested by the Buyer and specifically accepted in writing by Seller, Seller will, during the warranty period for Products, at an additional cost of 2% of the contract price, be responsible for the direct cost of:

1. Removing the Product from the installed location.
2. Transportation to the repair facility and return to the site.
3. Reinstallation on site.

The total liability of Seller for this Special Warranty for Products is limited to 50% of the contract price of the particular Product being repaired and excludes expenses for removing adjacent apparatus, walls, piping, structures, temporary service, etc.

Warranty For Services
Seller warrants that the Services performed by it hereunder will be performed in accordance with generally accepted professional standards.

The Services, which do not so conform, shall be corrected by Seller upon notification in writing by the Buyer within one (1) year after completion of the Services.

Unless otherwise agreed to in writing by Seller, Seller assumes no responsibility with respect to the suitability of the Buyer's, or its customer's, equipment or with respect to any latent defects in equipment not supplied by Seller. This warranty does not cover damage to Buyer's, or its customer's, equipment, components or parts resulting in whole or in part from improper maintenance or operation or from their deteriorated condition. Buyer will, at its cost, provide Seller with unobstructed access to the defective Services, as well as adequate free working space in the immediate vicinity of the defective Services and such facilities and systems, including, without limitation, docks, cranes and utility disconnects and connects, as may be necessary in order that Seller may perform its warranty obligations. The conducting of any tests shall be mutually agreed upon and Seller shall be notified of, and may be present at, all tests that may be made.

Warranty for Power Systems Studies
Seller warrants that any power systems studies performed by it will conform to generally accepted professional standards. Any portion of the study, which does not so conform, shall be corrected by Seller upon notification in writing by the Buyer within six (6) months after completion of the study. All warranty work shall be performed in a single shift straight time basis Monday through Friday. In the event that the study requires correction of warranty items on an overtime schedule, the premium portion of such overtime shall be for the Buyer's account.

Limitation on Warranties for Products, Services and Power Systems Studies
THE FOREGOING WARRANTIES ARE EXCLUSIVE EXCEPT FOR WARRANTY OF TITLE. SELLER DISCLAIMS ALL OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

CORRECTION OF NON-CONFORMITIES IN THE MANNER AND FOR THE PERIOD OF TIME PROVIDED ABOVE SHALL CONSTITUTE SELLER'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDY FOR FAILURE OF SELLER TO MEET ITS WARRANTY OBLIGATIONS, WHETHER CLAIMS OF THE BUYER ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE.

Asbestos
Federal Law requires that building or facility owners identify the presence, location and quantity of asbestos containing material (hereinafter "ACM") at work sites. Seller is not licensed to abate ACM. Accordingly, for any contract which includes the provision of Services, prior to (i) commencement of work at any site under a specific Purchase Order, (ii) a change in the work scope of any Purchase Order, the Buyer will certify that the work area associated with the Seller's scope of work includes the handling of Class II ACM, including but not limited to generator wedges and high temperature gaskets which include asbestos materials. The Buyer shall, at its expense, conduct abatement should the removal, handling, modification or reinstallation, or some or all of them, of said Class II ACM be likely to generate airborne asbestos fibers; and should such abatement affect the cost of or time of performance of the work then Seller shall be entitled to an equitable adjustment in the schedule, price and other pertinent affected provisions of the contract.

Compliance with Nuclear Regulation
Seller's Products are sold as commercial grade Products not intended for application in facilities or activities licensed by the United States Nuclear Regulatory Commission for atomic purposes. Further certification will be required for use of the Products in any safety-related application in any nuclear facility licensed by the U.S. Nuclear Regulatory Commission.

Returning Products
Authorization and shipping instructions for the return of any Products must be obtained from Seller before returning the Products. When return is occasioned due to Seller error, full credit including all transportation charges will be allowed.

Product Notices
Buyer shall provide the user (including its employees) of the Products with all Seller supplied Product notices, warnings, instructions, recommendations and similar materials.

Force Majeure
Seller shall not be liable for failure to perform or delay in performance due to fire, flood, strike or other labor difficulty, act of God, act of any governmental authority or of the Buyer, riot, embargo, fuel or energy shortage, car shortage, wrecks or delays in transportation, or due to any other cause beyond Seller's reasonable control. In the event of delay in performance due to any such cause, the date of delivery or time for completion will be extended by a period of time reasonably necessary to overcome the effect of such delay.

Liquidated Damages
Contracts which include liquidated damage clauses for failure to meet shipping or job completion promises are not acceptable or binding on Seller, unless such clauses are specifically accepted in writing by an authorized representative of the Seller at its headquarters office.

Patent Infringement
Seller will defend or, at its option, settle any suit or proceeding brought against Buyer, or Buyer's customers, to the extent it is based upon a claim that any Product or part thereof, manufactured by Seller or its subsidiaries and furnished hereunder, infringes any United States patent, other than a claim of infringement based upon use of a Product or part thereof in a process, provided Seller is notified in reasonable time and given authority, information and assistance (at Seller's expense) for the defense of same. Seller shall pay all legal and court costs and expenses and court-assessed damages awarded therein against Buyer resulting from or incident to such suit or proceeding. In addition to the foregoing, if at any time Seller determines there is a substantial question of infringement of any United States patent, and the use of such Product is or may be enjoined, Seller may, at its option and expense: either (a) procure for Buyer the right to continue using and selling the Product; (b) replace the Product with non-infringing apparatus; (c) modify the Product so it becomes non-infringing; or (d) as a last resort, remove the Product and refund the purchase price, equitably adjusted for use and obsolescence. In no case does Seller agree to pay any recovery based upon its Buyer's savings or profit through use of Seller's Products whether the use be special or ordinary. The foregoing states the entire liability of Seller for patent infringement.

The preceding paragraph does not apply to any claim of infringement based upon: (a) any modification made to a Product other than by Seller; (b) any design and/or specifications of Buyer to which a Product was manufactured; or (c) the use or combination of Product with other products where the Product does not itself infringe. As to the above-identified claim situations where the preceding paragraph does not apply, Buyer shall defend and hold Seller harmless in the same manner and to the extent as Seller's obligations described in the preceding paragraph. Buyer shall be responsible for obtaining (at Buyer's expense) all license rights required for Seller to be able to use software products in the possession of Buyer where such use is required in order to perform any Service for Buyer.

With respect to a Product or part thereof not manufactured by Seller or its subsidiaries, Seller will attempt to obtain for Buyer, from the supplier(s), the patent indemnification protection normally provided by the supplier(s) to customers.

Compliance with OSHA
Seller offers no warranty and makes no representation that its Products comply with the provisions or standards of the Occupational Safety and Health Act of 1970, or any regulation issued thereunder. In no event shall Seller be liable for any loss, damage, fines, penalty or expenses arising under said Act.

Limitation of Liability
THE REMEDIES OF THE BUYER SET FORTH IN THIS CONTRACT ARE EXCLUSIVE AND ARE ITS SOLE REMEDIES FOR ANY FAILURE OF SELLER TO COMPLY WITH ITS OBLIGATIONS HEREUNDER.

NOTWITHSTANDING ANY PROVISION IN THIS CONTRACT TO THE CONTRARY, IN NO EVENT SHALL SELLER BE LIABLE IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE FOR DAMAGE TO PROPERTY OR EQUIPMENT OTHER THAN PRODUCTS SOLD HEREUNDER, LOSS OF PROFITS OR REVENUE, LOSS OF USE OF PRODUCTS, COST OF CAPITAL, CLAIMS OF CUSTOMERS OF THE BUYER OR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, REGARDLESS OF WHETHER SUCH POTENTIAL DAMAGES ARE FORESEEABLE OR IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

THE TOTAL CUMULATIVE LIABILITY OF SELLER ARISING FROM OR RELATED TO THIS CONTRACT WHETHER THE CLAIMS ARE BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR OTHERWISE, SHALL NOT EXCEED THE PRICE OF THE PRODUCT OR SERVICES ON WHICH SUCH LIABILITY IS BASED.

Eaton Corporation.
1000 Cherrington Parkway
Moon Township, PA 15108
United States
Tel: 1-800-525-2000
Eaton.com

© 2008 Eaton Corporation
All Rights Reserved
Printed in USA
Publication No. SP03000001E
Z7740

Spec Section 16460 - Dry Type Transformers

Section Table of Contents
Spec Section 16460 - Dry Type Transformers

1.0 Spec Section 16460 - Dry Type Transformers
Section Table of Contents
1.1 Drawings
1.1.1 Item 124: X48M28F22CUE3NON-3WTA, 2WTA
1.1.2 Item 125: X48M28F75CUE3NON-3ETA, 2ETA
1.1.3 Item 126: X48M28F30CUE3NON-S2WTA
1.1.4 Item 127: X48M28F45CUE3NON-S1WTA
1.1.5 Item 128: X48M28F12CUE3NON-1ETA
1.1.6 Item 129: X48M28F33CUE3NON-BETA
1.1.7 Item 130: V48M28F75CUDNE3-BETB
1.1.8 Item 131: V48M28F30CUDNE3-TRE
1.1.9 Item 132: V48M28F33CUDNE3-SBETA
1.1.10 Item 133: V48M28F30CUDNE3-S4WTA
1.1.11 Item 135: X48M28F22CUE3NON-3WTA, 2WTA
1.1.12 Item 137A: X48M28F75CUE3NON
1.1.13 Item 137AA: X48M28F75CUE3NON
1.2 Test Reports
1.3 Instruction Data
1.3.1 Instruction Manual for Dry Type Transformers
1.4 Seismic Information
1.4.1 Dry Type Transformer Seismic Certificate

Drawings

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: X48M28F22CUE3NON
- Transformer Type: Harmonic Mitigating Transformer
- Phase: 3
- kVA: 225
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- HMT Type: 0 degree
- Electrostatic Shield: Y
- 200% Neutral: Y
- Frame: 919X
- Wiring Diagram: 201X
- Weight (lbs.): 3657
- Impedance (%): 7.28
- UL Listed: Y

Standard Values

- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 55
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

Field-Installed Accessories Included

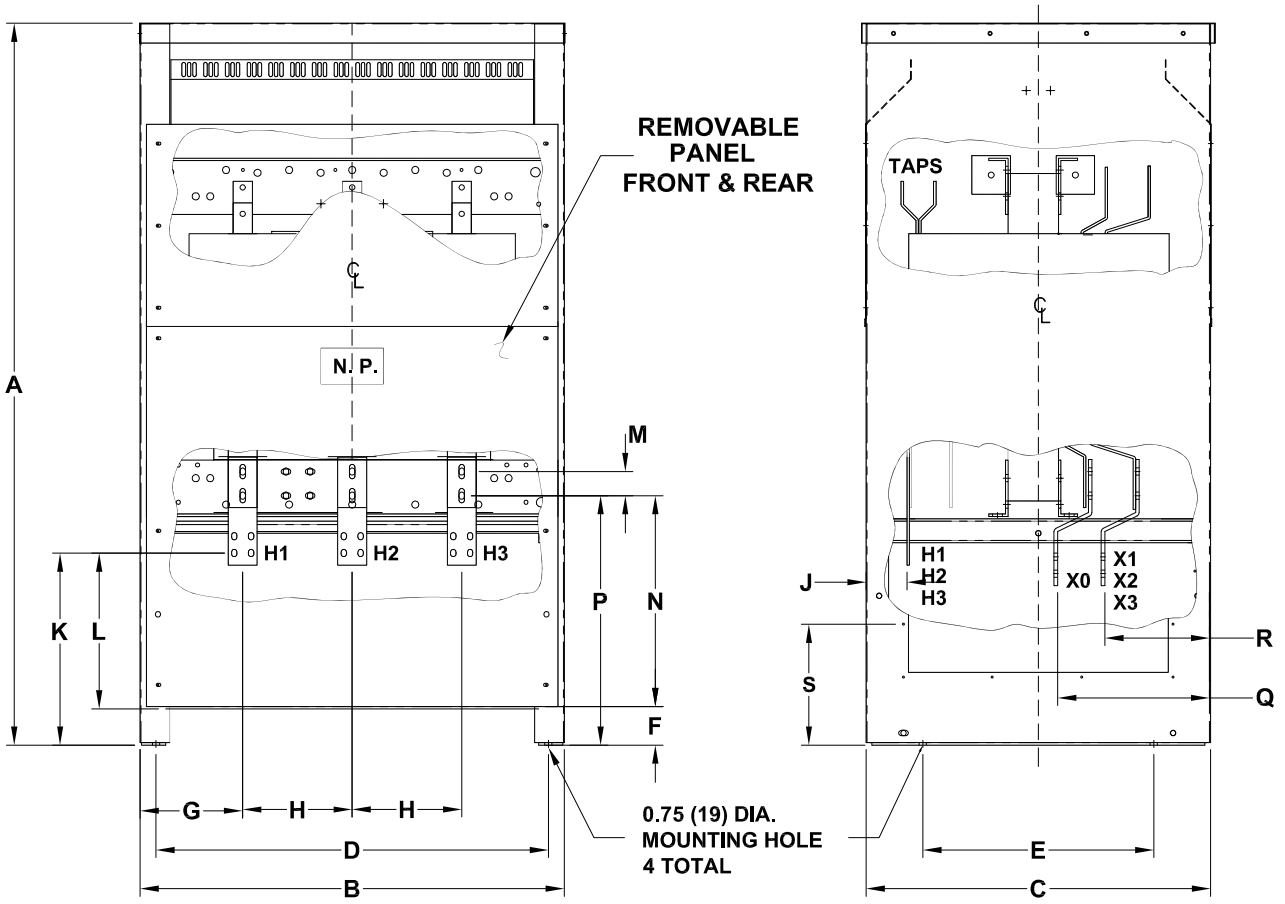
- Lug Kit: Not Included

The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

	PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**		
	APPROVED BY:	DATE:	JOB NAME: UC Merced Science Bldg-		
			DESIGNATION: 3WTA, 2WTA,, 1WTA, SBETB		
	VERSION: 4,0,0,4		TYPE: Dry-Type Transformer	DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 124	SHEET: 1 of 1

NOTES:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-35.
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.



THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN in(mm)

FRAME	A	B	C	D	E	F	G	H
FR919X	74.98(1905)	44.06(1119)	35.76(908)	40.76(1035)	24.00(610)	4.00(102)	10.65(271)	11.38(289)
	J	K	L	M	N	P	Q	R
	4.24(108)	19.94(507)	16.19(411)	2.50(64)	21.91(556)	25.91(658)	15.79(401)	10.88(276)
	S							
	15.20(386)							

This Frame is not California's OSHPD certified, contact TRC for compliant frame information.

REV	DESCRIPTION	DFTR	APPD	DATE
	.	.	.	
06	CLEAN DWG & UPDATE REVISION ECO-049980	M. RDZ	C.BADILLO	16/04/13
03	Agregar Leyenda OSHPD ECN068605	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: TRANSFORMER | FEDERAL ID NO. ,

DFTR: J.C.SOTO | DATE: 07/07/10

APPD: C.BADILLO | DATE: 07/07/10

S.O. .

REVISION: 06

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE: DRY TYPE TRANSFORMER OUTLINE

TYPE: DRY TIPE TRASFORMER | OUTLINE

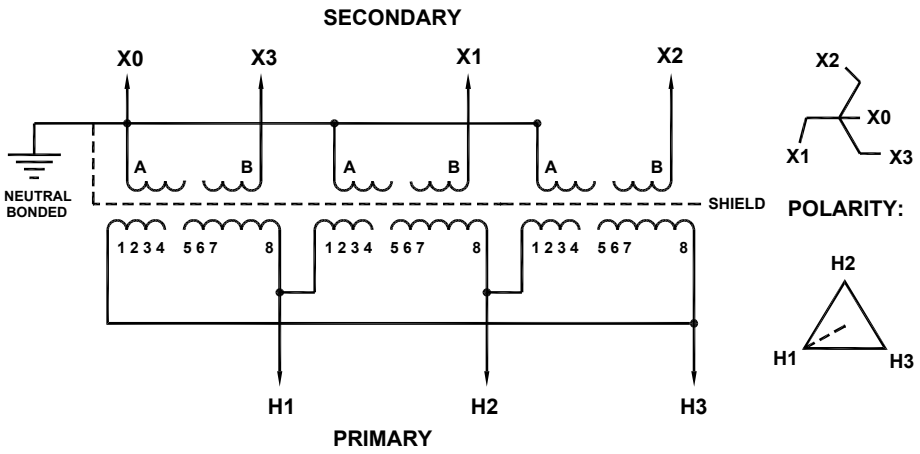
G.O. .

DWG: FR919X

SHEET: 1 OF 01

GO/NEG-Alt-Date:	Job Name:
MSR0005766-C016-2/24/2014	UC Merced Science Bldg-
Item Number: 124 / **Catalog Number:** X48M28F22CUE3NON	**Designation:** 3WTA, 2WTA,, 1WTA, SBETB

VOLTS	CONNECT
504	4 TO 5
492	4 TO 6
480	4 TO 7
468	3 TO 6
456	3 TO 7
444	2 TO 6
432	2 TO 7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER–HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.	DFTR A. CISNEROS	DATE 03/22/02	Cutler–Hammer Juarez, Mexico			
	APPD G. LOPEZ	DATE 03/22/02	TITLE TRANSFORMER WIRING DIAGRAM #201X			
	S.O.		TYPE DRY TYPE DISTRIBUTION TRANSFORMERS		DRAWING TYPE WIRING	
FEDERAL ID NO	PRODUCT CODE TRANSFORMERS	REVISION 01	DWG SIZE A	G.O.	DWG 201X	SHEET 01 OF 01

GO/NEG-Alt-Date:		Job Name:
MSR0005766-C016-2/24/2014		UC Merced Science Bldg-
Item Number:	**Catalog Number:**	**Designation:**
124	X48M28F22CUE3NON	3WTA, 2WTA,, 1WTA, SBETB

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: X48M28F75CUE3NON
- Transformer Type: Harmonic Mitigating Transformer
- Phase: 3
- kVA: 75
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- HMT Type: 0 degree
- Electrostatic Shield: Y
- 200% Neutral: Y
- Frame: 916A
- Wiring Diagram: 200X
- Weight (lbs.): 937
- Impedance (%): 5.55
- UL Listed: Y

Standard Values

- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 50
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

Field-Installed Accessories Included

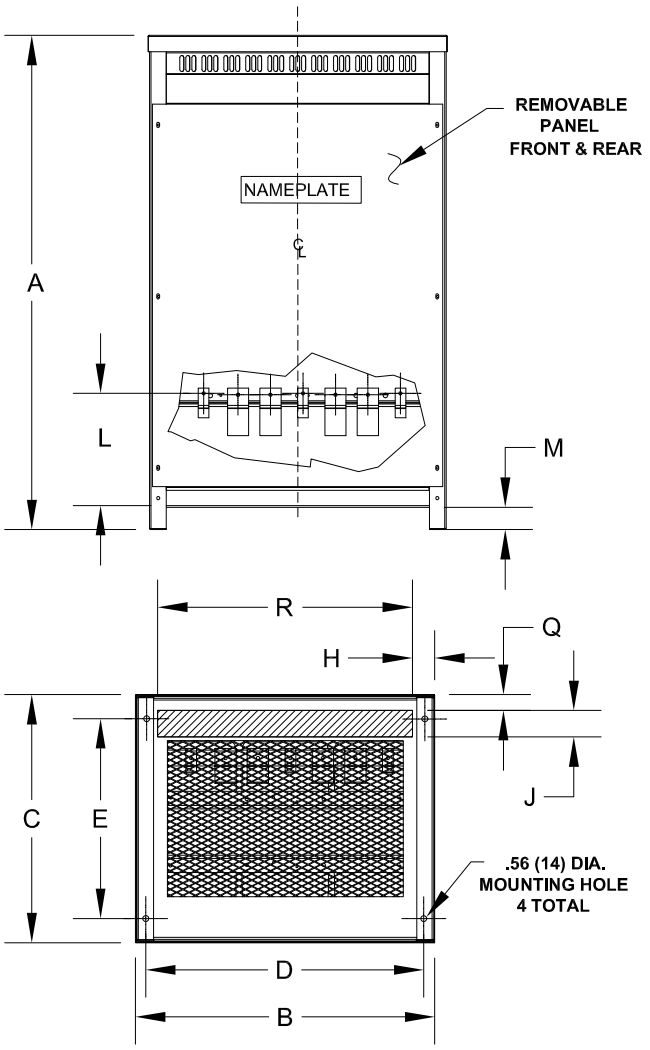
- Lug Kit: Not Included

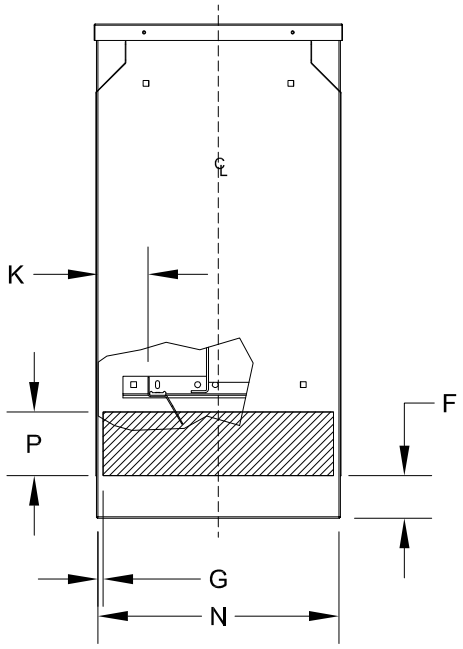
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

	PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**		
	APPROVED BY:	DATE:	JOB NAME: UC Merced Science Bldg-		
			DESIGNATION: 3ETA, 2ETA		
	VERSION: 4,0,0,4		TYPE: Dry-Type Transformer	DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 125	SHEET: 1 of 1

NOTE:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-19
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.





USE PxN BOTH SIDES AND RxJ ON BOTTOM AS RECOMMENDED CABLE ENTRY LOCATION.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (mm)

FRAME	A	B	C	D	E	F	G	H	J	K
FR916A	46.58(1183)	28.22(717)	23.42(595)	26.29(668)	18.82(478)	4.01(102)	.50(13)	2.09(53)	2.50(64)	4.94(125)
	L	M	N	P	Q	R				
	12.84(326)	2.10(53)	23.00(584)	6.00(152)	1.50(38)	24.00(610)				

REV	DESCRIPTION	DFTR	APPD	DATE
12	VERIFICACION DE DIMENSIONES MOL076933	J.C.SOTO	C.ROMO	14/OCT/13
11	REMOVER LA LEYENDA OSHPD. ECN076764.	M.RDZ	C.BADILLO	16/04/13
10	SE COLOCARON CORRECTAMNTE LAS ACOTACIONES ECO-047308	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: OL

FEDERAL ID NO. ,

DFTR: S.BELTRAN DATE: 2/8/2010

APPD: C.BADILLO DATE: 2/6/2010

S.O. .

REVISION: 12

G.O. .

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE: DRY TYPE TRANSFORMER OUTLINE

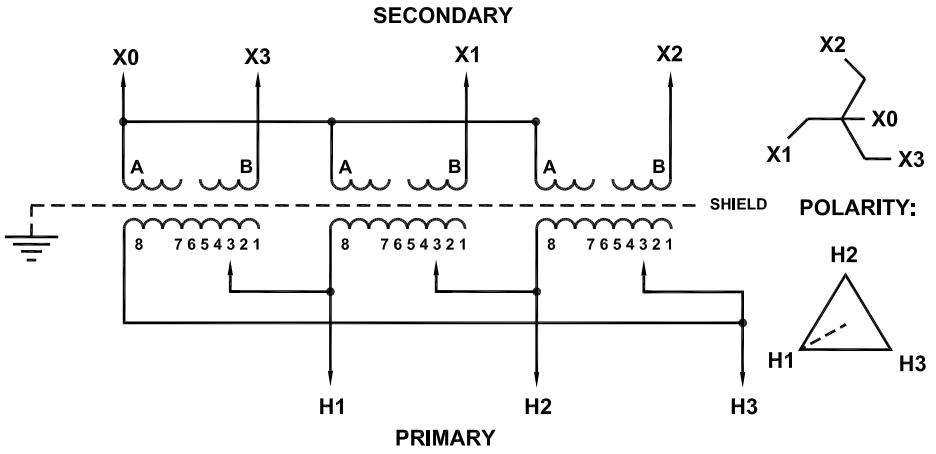
TYPE: TRANSFORMER — OUTLINE

DWG: FR916A

SHEET: 1 OF 1

GO/NEG-Alt-Date:	Job Name:
MSR0005766-C016-2/24/2014	UC Merced Science Bldg-
Item Number: 125	**Catalog Number:** X48M28F75CUE3NON
	Designation: 3ETA, 2ETA

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER–HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

DFTR: A. CISNEROS	DATE: 03/22/02	Cutler–Hammer	Juarez, Mexico
APPD: G. LOPEZ	DATE: 03/22/02	TITLE: TRANSFORMER WIRING DIAGRAM #200X	
S.O.		TYPE: DRY TYPE DISTRIBUTION TRANSFORMERS	DRAWING TYPE: WIRING
FEDERAL ID NO	PRODUCT CODE: TRANSFORMERS	REVISION: 02 / DWG SIZE: A	G.O. / DWG: 200X / SHEET: 01 OF 01

GO/NEG-Alt-Date:		Job Name:
MSR0005766-C016-2/24/2014		UC Merced Science Bldg-
Item Number:	**Catalog Number:**	**Designation:**
125	X48M28F75CUE3NON	3ETA, 2ETA

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: X48M28F30CUE3NON
- Transformer Type: Harmonic Mitigating Transformer
- Phase: 3
- kVA: 30
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- HMT Type: 0 degree
- Electrostatic Shield: Y
- 200% Neutral: Y
- Frame: 912B
- Wiring Diagram: 200X
- Weight (lbs.): 479
- Impedance (%): 5.28
- UL Listed: Y

Standard Values

- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 45
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

Field-Installed Accessories Included

- Lug Kit: Not Included

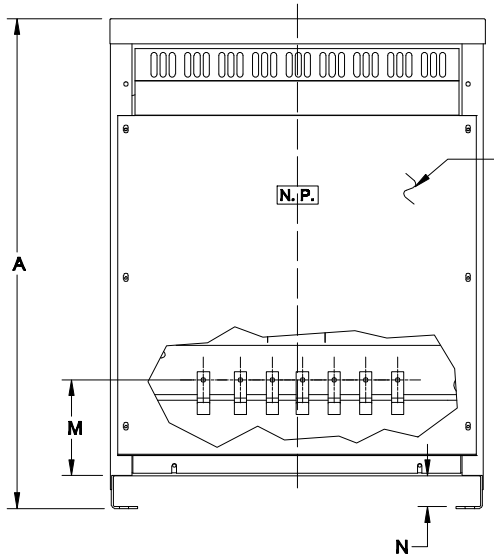
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

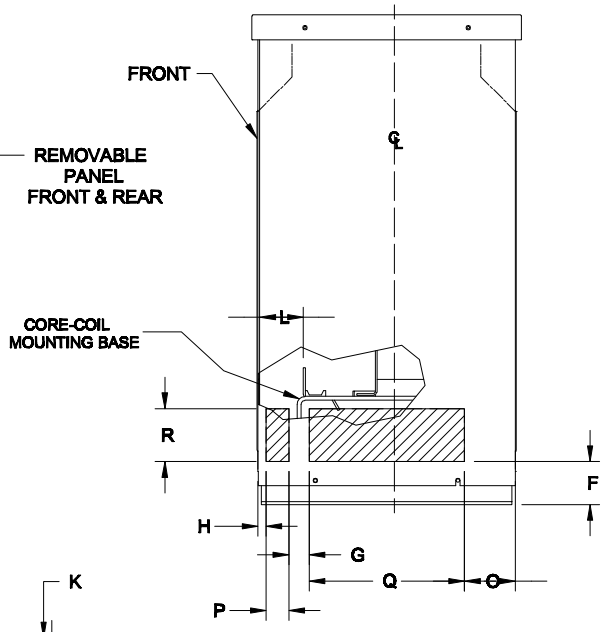
PREPARED BY	DATE		
Al Thompson	2/24/2014	**Eaton Corporation**	
APPROVED BY	DATE	JOB NAME	UC Merced Science Bldg-
		DESIGNATION	S2WTA,
VERSION		TYPE	DRAWING TYPE
4,0,0,4		Dry-Type Transformer	Final

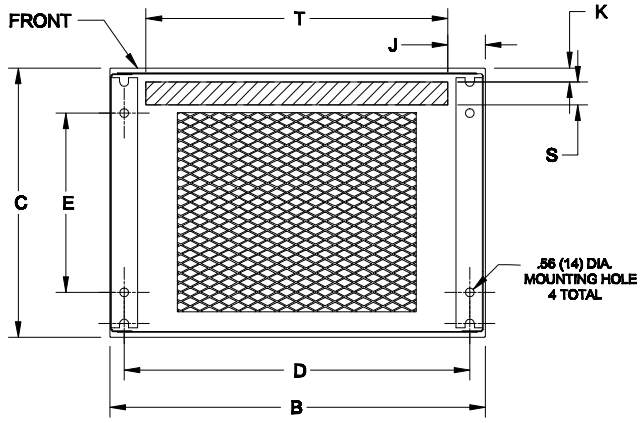
NEG-ALT Number	REVISION	DWG SIZE	G.O.	ITEM	SHEET
LT161206Y103-C016	0	A	MSR0005766	126	1 of 1

REF.
DWG. NO. 42-5203

NOTE:
1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-38
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.







USE RxP AND/OR RxQ BOTH SIDES, AND SxT ON BOTTOM AS RECOMMENDED CABLE ENTRY LOCATION.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (MM)

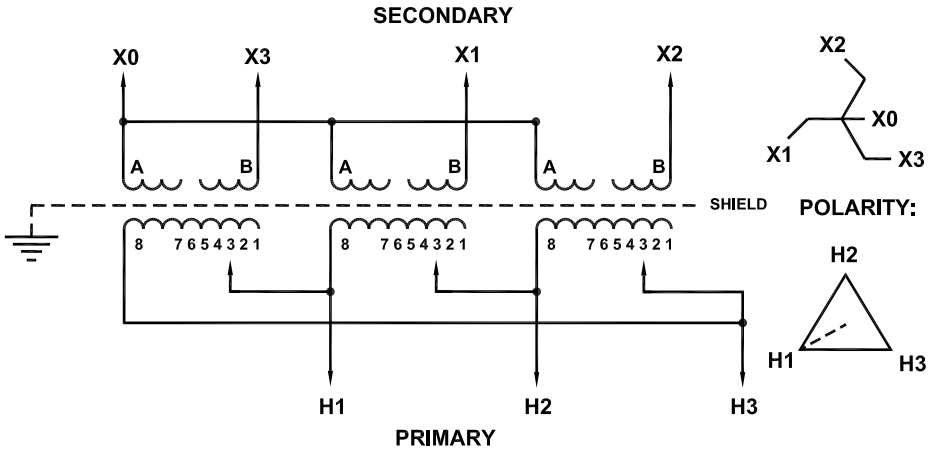
FRAME	A	B	C	D	E	F	G	H	J	K
FR912B	30.00(762)	23.00(584)	16.50(419)	21.04(534)	11.00(279)	2.62(67)	1.25(32)	.50(13)	2.29(58)	.86(22)
	L	M	N	O	P	Q	R	S	T	
	3.60(91)	5.85(149)	1.89(48)	3.12(79)	1.40(36)	9.51(242)	3.25(83)	1.40(36)	18.50(467)	

Rev4-Ene/10

DRAFTER H.GUEZ	DATE 2/8/2010	MODEL FILENAME V45E001.iam	MODEL REV 4	EATON CORPORATION - CONFIDENTIAL AND PROPRIETARY	
ENGINEER C.BADILLO	DATE 2/8/2010	ENGINEERING CHANGE NOTICE NO.			
MFG. ENG.	DATE	UNLESS SPECIFIED TOLERANCES PER			
NEXT ASSY		A	TITLE DRY TYPE TRANSFORMER OUTLINE		THIRD ANGLE PROJECTION
TOOL REF.					
REFERENCE		SCALE 1-1	PROJECT NO.	DWG NO. FR912B	
SHOP/GENERAL ORDER NO.		TITLE BLOCK REV - 4	PRODUCT TRANSFORMER	PARTS LIST FR912B	SHEET 1 OF 1 REV 4

GO/NEG-Alt-Date:		Job Name:
MSR0005766-C016-2/24/2014		UC Merced Science Bldg-
Item Number:	**Catalog Number:**	**Designation:**
126	X48M28F30CUE3NON	S2WTA,

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER–HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

DFTR: A. CISNEROS	DATE: 03/22/02	Cutler–Hammer	Juarez, Mexico
APPD: G. LOPEZ	DATE: 03/22/02	TITLE: TRANSFORMER WIRING DIAGRAM #200X	
S.O.		TYPE: DRY TYPE DISTRIBUTION TRANSFORMERS	DRAWING TYPE: WIRING
FEDERAL ID NO	PRODUCT CODE: TRANSFORMERS	REVISION: 02 / DWG SIZE: A	G.O. / DWG: 200X / SHEET: 01 OF 01

GO/NEG-Alt-Date:	Job Name:	
MSR0005766-C016-2/24/2014	UC Merced Science Bldg-	
Item Number: 126	**Catalog Number:** X48M28F30CUE3NON	**Designation:** S2WTA,

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: X48M28F45CUE3NON
- Transformer Type: Harmonic Mitigating Transformer
- Phase: 3
- kVA: 45
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- HMT Type: 0 degree
- Electrostatic Shield: Y
- 200% Neutral: Y
- Frame: 915D
- Wiring Diagram: 200X
- Weight (lbs.): 663
- Impedance (%): 5.19
- UL Listed: Y

Standard Values

- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 45
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

Field-Installed Accessories Included

- Lug Kit: Not Included

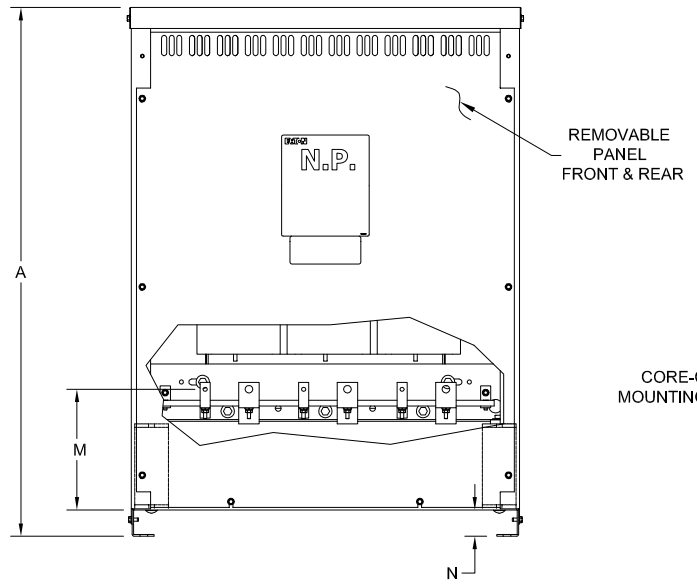
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

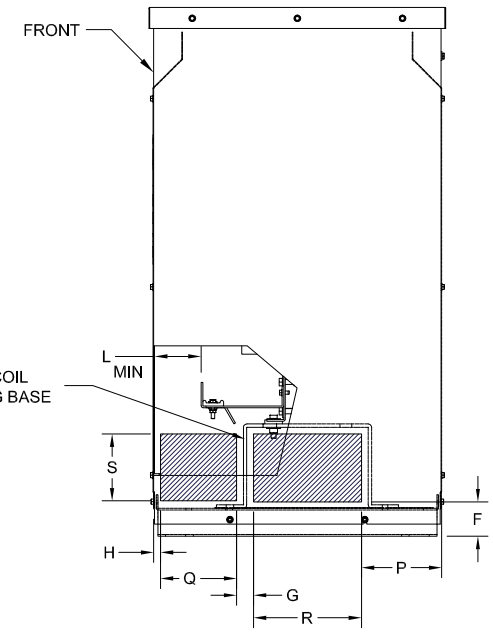
	PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**		
	APPROVED BY:	DATE:	JOB NAME: UC Merced Science Bldg-		
			DESIGNATION: S1WTA		
	VERSION: 4,0,0,4		TYPE: Dry-Type Transformer	DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 127	SHEET: 1 of 1

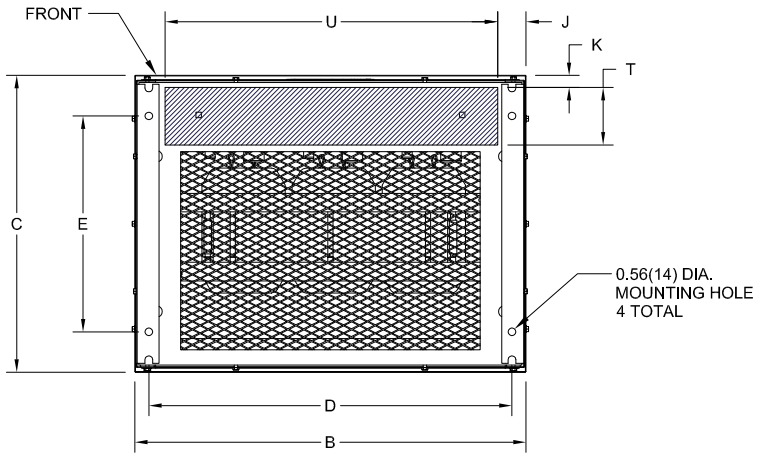
NOTES:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-39.
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.

REF.
DWG. NO. 42-5203







USE RxS AND/OR QxS
BOTH SIDES, AND TxU ON BOTTOM
AS RECOMMENDED CABLE
ENTRY LOCATION.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (mm)

FRAME	A	B	C	D	E	F	G	H	J	K
FR915D	39.18(995)	29.00(737)	22.00(559)	26.92(684)	16.00(406)	2.55(65)	1.25(32)	.50(13)	2.10(53)	.90(23)
	L	M	N	P	Q	R	S	T	U	
	3.45(88)	8.94(227)	1.95(50)	5.94(151)	5.65(144)	8.00(203)	4.95(126)	4.25(108)	24.66(626)	

Rev 3. - OCT-13

REV	DESCRIPTION	DFTR	APPD	DATE
3	ADDED BTM VIEW	J.C.S.	E.ROBLES	21/OCT/13

REVISIONS

PRODUCT CODE: TRANSFORMER | FEDERAL ID NO. ,

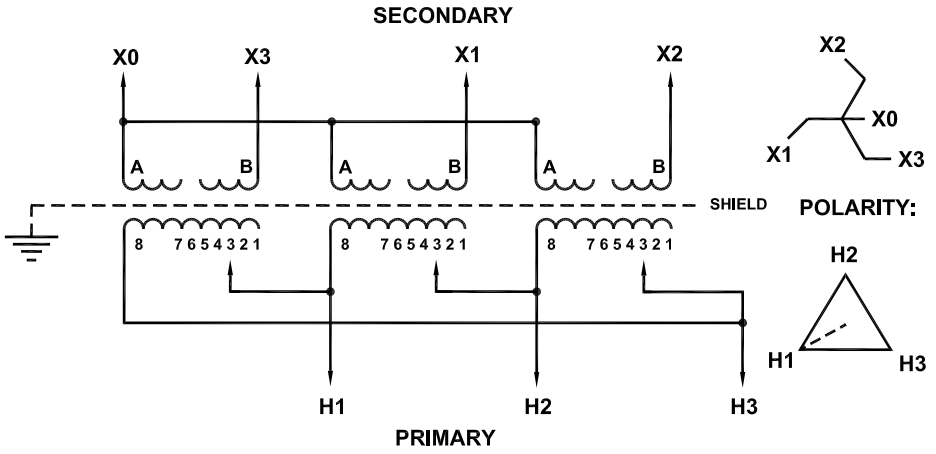
DFTR S.C.T. | DATE 10/12/06
APPD E.ROBLES | DATE 10/12/06
S.O. .
REVISION 03

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE DRY TYPE TRANSFORMER OUTLINE .
TYPE DRY TYPE TRANSFORMER | OUTLINE
G.O. . | DWG FR915D | SHEET 1 OF 01

GO/NEG-Alt-Date:	Job Name:	
MSR0005766-C016-2/24/2014	UC Merced Science Bldg-	
Item Number: 127	**Catalog Number:** X48M28F45CUE3NON	**Designation:** S1WTA

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER–HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

DFTR: A. CISNEROS	DATE: 03/22/02	Cutler–Hammer Juarez, Mexico	
APPD: G. LOPEZ	DATE: 03/22/02	TITLE: TRANSFORMER WIRING DIAGRAM #200X	
S.O.		TYPE: DRY TYPE DISTRIBUTION TRANSFORMERS	DRAWING TYPE: WIRING
FEDERAL ID NO	PRODUCT CODE: TRANSFORMERS	REVISION: 02 / DWG SIZE: A	G.O. / DWG: 200X / SHEET: 01 OF 01

GO/NEG-Alt-Date:	Job Name:	
MSR0005766-C016-2/24/2014	UC Merced Science Bldg-	
Item Number: 127	**Catalog Number:** X48M28F45CUE3NON	**Designation:** S1WTA

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: X48M28F12CUE3NON
- Transformer Type: Harmonic Mitigating Transformer
- Phase: 3
- kVA: 112.5
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- HMT Type: 0 degree
- Electrostatic Shield: Y
- 200% Neutral: Y
- Frame: 917
- Wiring Diagram: 200X
- UL Listed: Y

Standard Values

- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 50
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

Field-Installed Accessories Included

- Lug Kit: Not Included

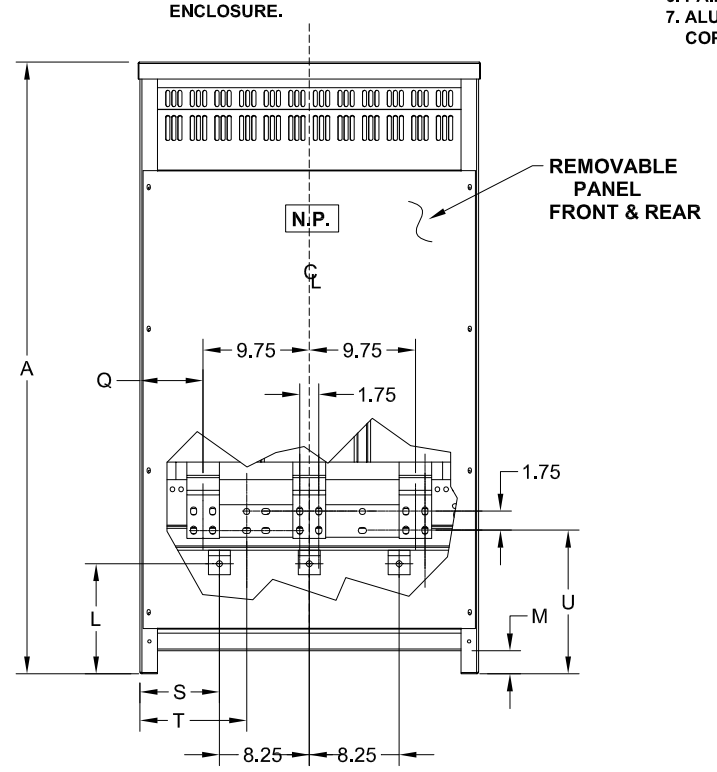
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

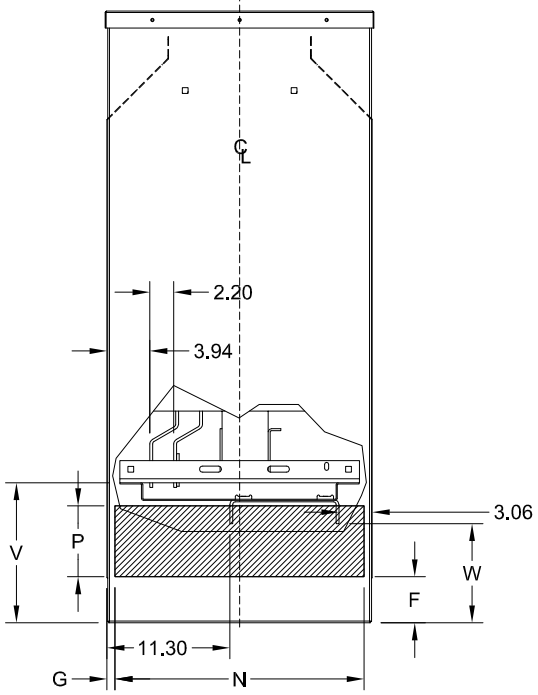
PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**			
APPROVED BY:	DATE:	JOB NAME: UC Merced Science Bldg-			
		DESIGNATION: 1ETA			
VERSION: 4,0,0,4		TYPE: Dry-Type Transformer		DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 128	SHEET: 1 of 1

REF.
DWG. NO. 7073C02H0

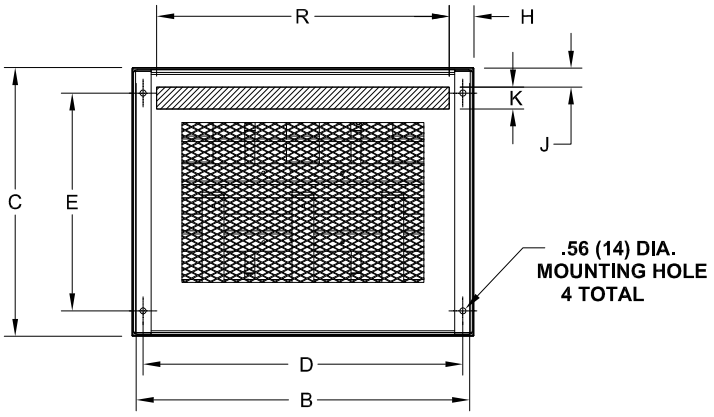
NOTE:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-34.
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220~C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.





USE PxN BOTH SIDES, AND KxR ON BOTTOM AS RECOMMENDED CABLE ENTRY LOCATION.



This Frame is not California's OSHPD certified, contact TRC for compliant frame information.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (mm)

FRAME	A	B	C	D	E	F	G	H	J	K	L
FR917	56.17(1427)	30.61(777)	24.67(627)	29.37(746)	20.00(508)	4.23(107)	.75(19)	2.28(58)	1.73(44)	2.01(51)	10.11(257)
	M	N	P	Q	R	S	T	U	V	W	
	2.12(54)	22.88(581)	6.52(166)	5.80(147)	26.87(682)	7.30(185)	9.80(249)	13.19(335)	12.86(327)	9.11(231)	

REV	DESCRIPTION	DFTR	APPD	DATE
11	SE COLOCARON CORRECTAMENTE LAS ACOTACIONES ECO-047308	M.RDZ	C.BADILLO	16/04/13
09	Agregar Leyenda OSHPD ECN068605	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: OL

FEDERAL ID NO. ,

DFTR S.CASTRO DATE 06/17/04

APPD C.BADILLO DATE 06/17/04

S.O. .

REVISION 11

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE DRY TYPE TRANSFORMER OUTLINE

TYPE TRANSFORMER

WIRING DIAGRAM

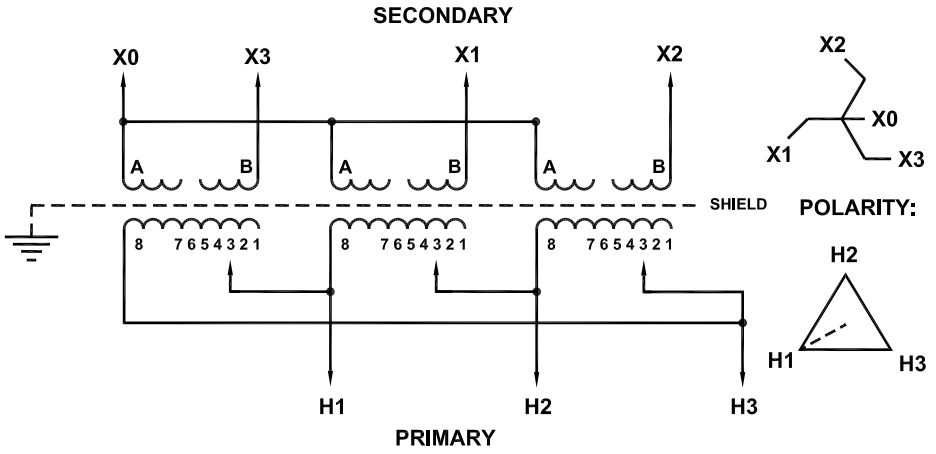
G.O. .

DWG FR917

SHEET 1 OF 1

GO/NEG-Alt-Date:		Job Name:
MSR0005766-C016-2/24/2014		UC Merced Science Bldg-
Item Number:	**Catalog Number:**	**Designation:**
128	X48M28F12CUE3NON	1ETA

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER–HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

DFTR: A. CISNEROS	DATE: 03/22/02	Cutler–Hammer Juarez, Mexico	
APPD: G. LOPEZ	DATE: 03/22/02	TITLE: TRANSFORMER WIRING DIAGRAM #200X	
S.O.		TYPE: DRY TYPE DISTRIBUTION TRANSFORMERS	DRAWING TYPE: WIRING
FEDERAL ID NO	PRODUCT CODE: TRANSFORMERS	REVISION: 02 / DWG SIZE: A	G.O. / DWG: 200X / SHEET: 01 OF 01

GO/NEG-Alt-Date:		Job Name:
MSR0005766-C016-2/24/2014		UC Merced Science Bldg-
Item Number:	**Catalog Number:**	**Designation:**
128	X48M28F12CUE3NON	1ETA

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: X48M28F33CUE3NON
- Transformer Type: Harmonic Mitigating Transformer
- Phase: 3
- kVA: 300
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- HMT Type: 0 degree
- Electrostatic Shield: Y
- 200% Neutral: Y
- Frame: 919EX
- Wiring Diagram: 201X
- UL Listed: Y

Standard Values

- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 55
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

Field-Installed Accessories Included

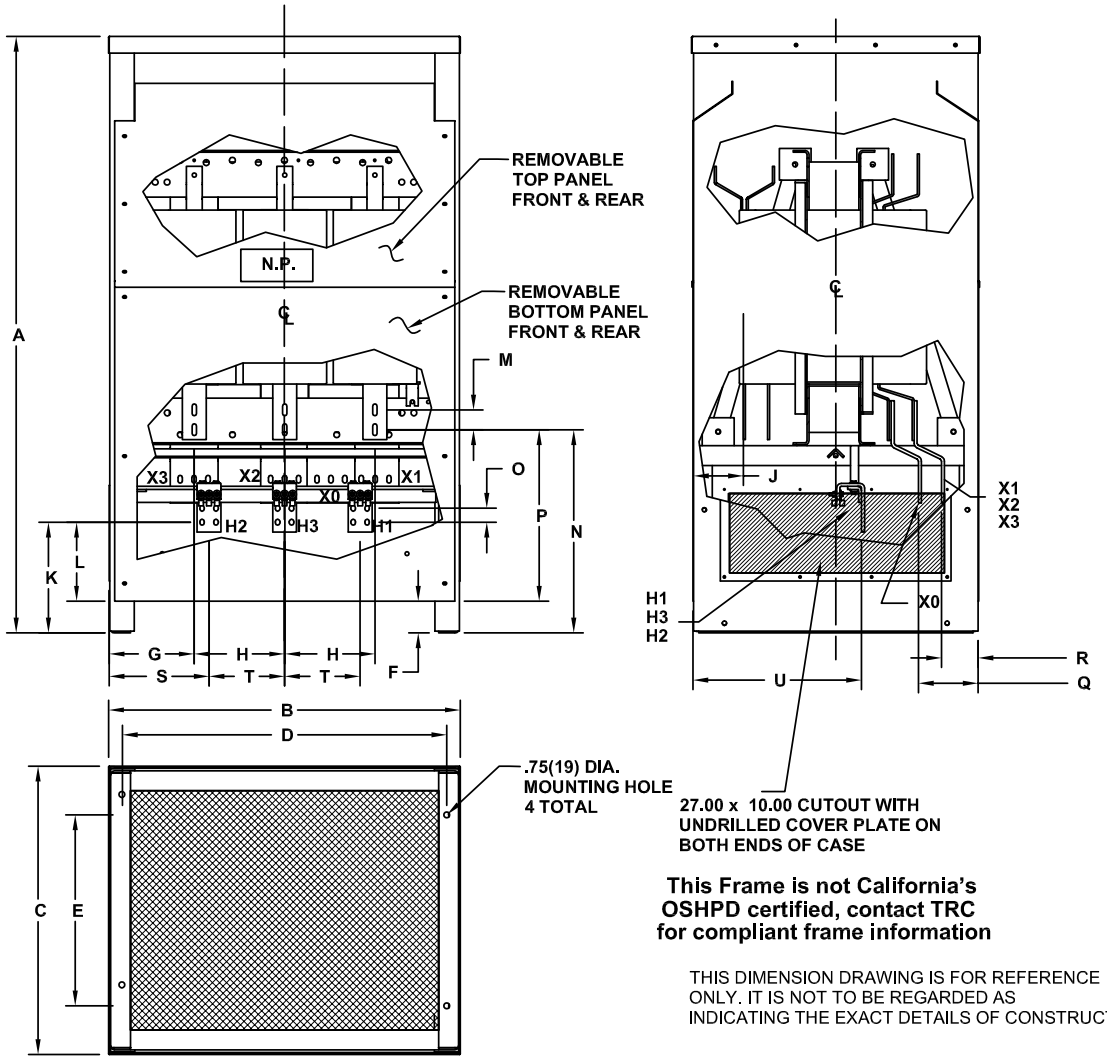
- Lug Kit: Not Included

The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**			
APPROVED BY	DATE	JOB NAME: UC Merced Science Bldg-			
		DESIGNATION: BETA			
VERSION: 4,0,0,4		TYPE: Dry-Type Transformer		DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0 / DWG SIZE: A	G.O.: MSR0005766		ITEM: 129	SHEET: 1 of 1

REF:
DWG. NNO. 7077C19H01

NOTE:
1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-35.
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.



This Frame is not California's OSHPD certified, contact TRC for compliant frame information

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (MM)

FRAME	A	B	C	D	E	F	G	H	J	K
FR919EX	75.00(1905)	44.20(1122)	36.23(920)	40.76(1035)	24.00(610)	4.00(101))	10.47(266)	11.52(293)	4.24(108)	13.93(354)
	L	M	N	O	P	Q	R	S	T	U
	9.95(253)	2.50(64)	25.50(648)	1.75(44)	21.56(548)	15.79(401)	10.88(276)	12.54(319)	9.50(241	21.19(538)

REV	DESCRIPTION	DFTR	APPD	DATE
02	Agregar Leyenda OSHPD ECN068605	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: OL | FEDERAL ID NO. ,

DFTR S.CASTRO	DATE 06/26/07
APPD C.BADILLO	DATE 06/26/07
S.O. .	
REVISION 02	

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

EATON

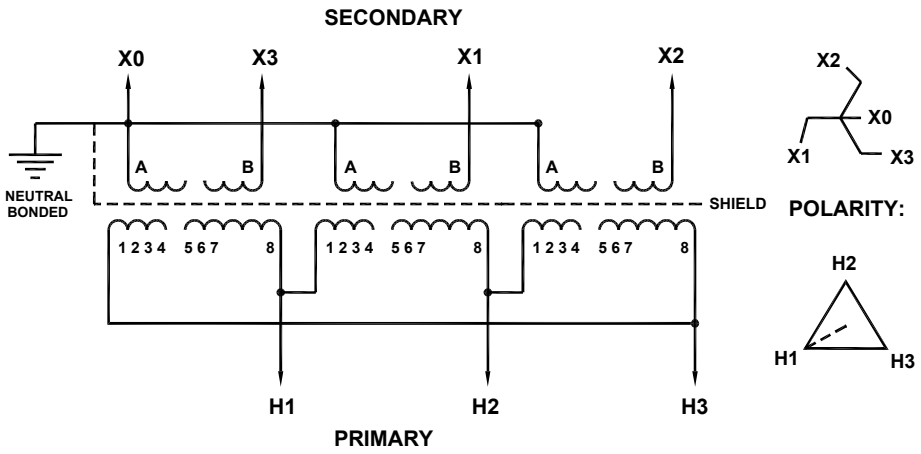
TITLE: DRY TYPE TRANSFORMER OUTLINE

TYPE: TRANSFORMER | WIRING DIAGRAM

G.O. . | DWG FR919EX | SHEET 1 OF 01

GO/NEG-Alt-Date:	Job Name:
MSR0005766-C016-2/24/2014	UC Merced Science Bldg-
Item Number: 129	**Catalog Number:** X48M28F33CUE3NON
	Designation: BETA

VOLTS	CONNECT
504	4 TO 5
492	4 TO 6
480	4 TO 7
468	3 TO 6
456	3 TO 7
444	2 TO 6
432	2 TO 7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER–HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.	DFTR A. CISNEROS	DATE 03/22/02	Cutler–Hammer Juarez, Mexico			
	APPD G. LOPEZ	DATE 03/22/02	TITLE TRANSFORMER WIRING DIAGRAM #201X			
	S.O.		TYPE DRY TYPE DISTRIBUTION TRANSFORMERS		DRAWING TYPE WIRING	
FEDERAL ID NO	PRODUCT CODE TRANSFORMERS	REVISION 01	DWG SIZE A	G.O.	DWG 201X	SHEET 01 OF 01

GO/NEG-Alt-Date:		Job Name:
MSR0005766-C016-2/24/2014		UC Merced Science Bldg-
Item Number:	**Catalog Number:**	**Designation:**
129	X48M28F33CUE3NON	BETA

Dry-Type Transformers General Information

Custom Transformers must be approved by TRC - Avery Creek

This is a custom-manufactured product. Once it is released for manufacturing, it cannot be cancelled. This product cannot be returned for credit.

- Custom Transformer Style Number: V48M28T75E3
- Similar to Standard Transformer: CSL3 Efficient Transformer
- Transformer Type: 3
- Phase: 75
- kVA: 480
- Primary Volts: 208Y/120
- Secondary Volts: 115C
- Temperature Rise: Copper
- Winding Material: NEMA 2 (N3R w/opt'l weathershield)
- Enclosure Type: 60
- Frequency (Hz): N
- Easy Install: Y
- 200% Neutral

Standard Values: 1

- K-Factor: 2@+2.5%, 4@-2.5%
- TAPS: 0
- Sound Reduction (dB): 50
- NEMA ST20 Sound Level (dB): N
- NEMA TP-1 Energy Efficient: None
- Infrared Viewing Window

Field-Installed Accessories Included: Not Included

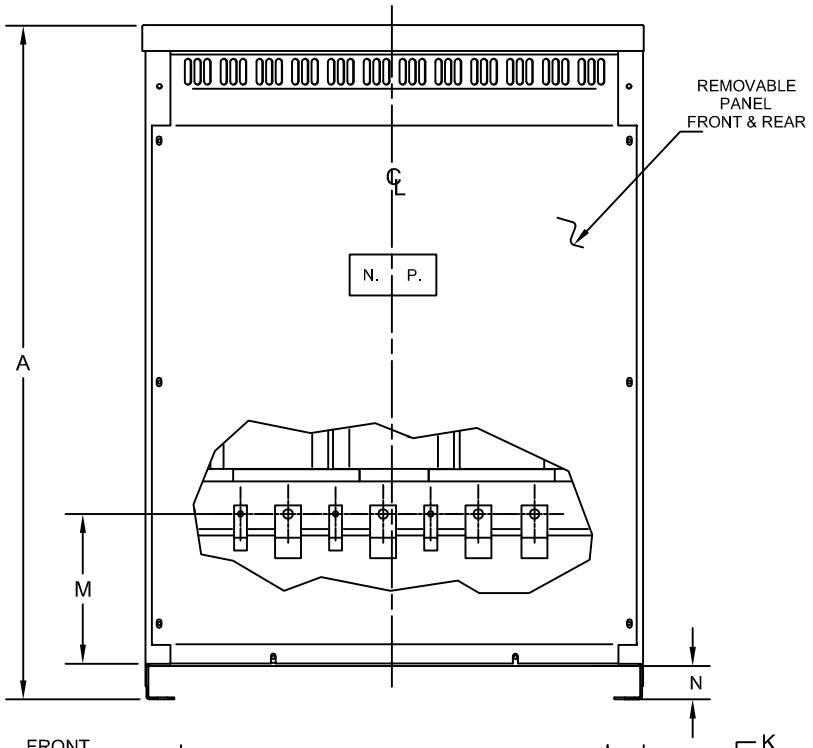
- Lug Kit
- CUSTOM: Winding Material Copper
- CUSTOM: 200% Neutral Y
- CUSTOM: Temperature Rise 115C
- CUSTOM: Sound Reduction 0
-
-

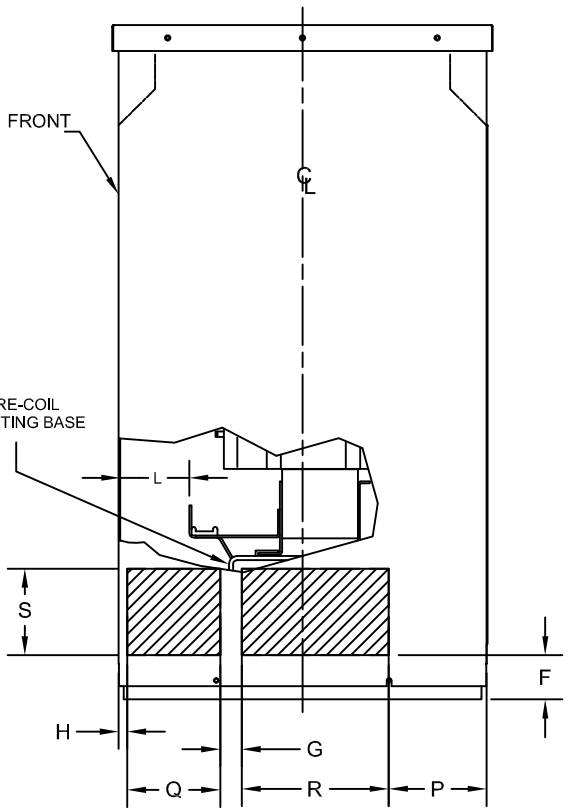
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

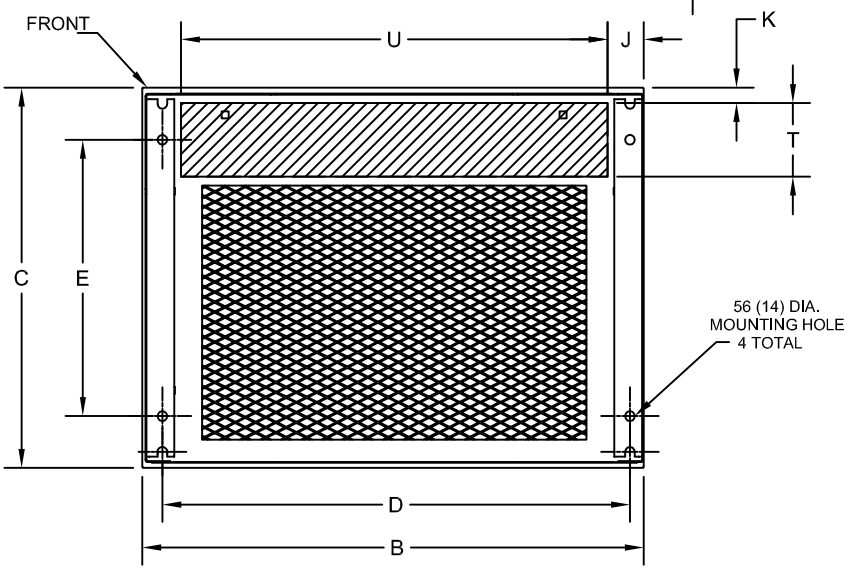
PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**			
APPROVED BY:	DATE:	JOB NAME: UC Merced Science Bldg-			
		DESIGNATION: BETB			
VERSION: 4,0,0,4		TYPE: Dry-Type Transformer		DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 130	SHEET: 1 of 1

NOTE:
1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-39.
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220˚C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.

REF.
DWG. NO. 42-5203







USE QxS AND/OR SxR
BOTH SIDES, AND TxU ON BOTTOM
AS RECOMMENDED CABLE
ENTRY LOCATION.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (mm)

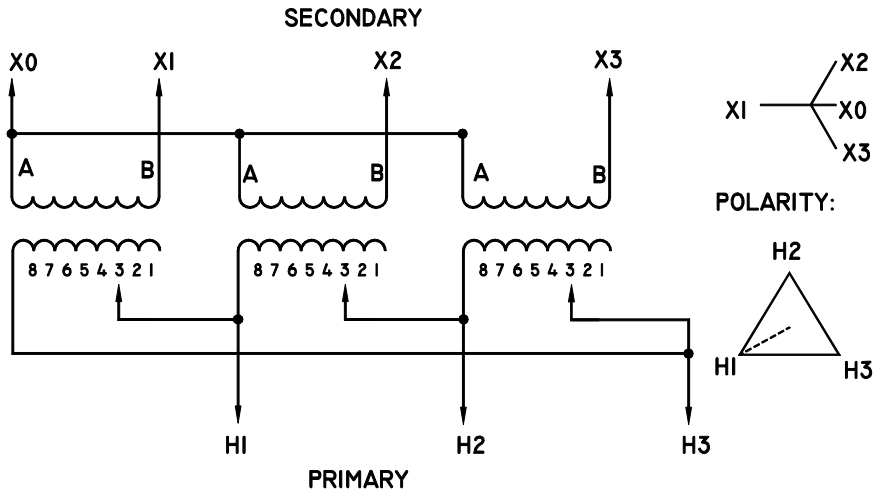
FRAME	A	B	C	D	E	F	G	H	J	K
FR914D	39.00(991)	29.00(737)	22.00(559)	27.00(686)	15.98(406)	2.55(65)	1.25(32)	.50(13)	2.10(53)	.90(23)
	L	M	N	P	Q	R	S	T	U	
	4.00(102)	8.61(219)	1.83(46)	7.70(196)	5.37(136)	8.50(216)	5.00(127)	4.25(108)	24.66(626)	

Rev 4. - MAY-13

DRAFTER H.G'LEZ	DATE 2/8/2010	MODEL FILENAME V75E001.iam	MODEL REV 4	EATON CORPORATION - CONFIDENTIAL AND PROPRIETARY
ENGINEER C.BADILLO	DATE 2/8/2010	ENGINEERING CHANGE NOTICE NO.		
MFG. ENG.	DATE	UNLESS SPECIFIED TOLERANCES PER		
NEXT ASSY		A	TITLE: DRY TYPE TRANSFORMER OUTLINE	THIRD ANGLE PROJECTION
TOOL REF.				
REFERENCE	SCALE 1-1	PROJECT NO.	DWG NO. FR914D	
SHOP/GENERAL ORDER NO.	TITLE BLOCK REV - 4	PRODUCT TRANSFORMER	PARTS LIST FR914D	SHEET 1 OF 1 REV 4

THIS DOCUMENT, INCLUDING THE DRAWING AND INFORMATION CONTAINED THEREON, IS CONFIDENTIAL AND IS THE EXCLUSIVE PROPERTY OF EATON CORPORATION, AND IS MERELY ON LOAN AND SUBJECT TO RECALL BY EATON CORPORATION AT ANY TIME.
BY TAKING POSSESSION OF THIS DOCUMENT, THE RECIPIENT ACKNOWLEDGES AND AGREES THAT THIS DOCUMENT CANNOT BE USED IN ANY MANNER ADVERSE TO THE INTERESTS OF EATON, AND THAT NO PORTION OF THIS DOCUMENT MAY BE COPIED OR OTHERWISE REPRODUCED WITHOUT THE PRIOR WRITTEN CONSENT OF EATON CORPORATION. IN THE CASE OF CONFLICTING CONTRACTUAL PROVISIONS, THIS NOTICE SHALL GOVERN THE STATUS OF THIS DOCUMENT.

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER-HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

DFTR HEG	DATE 12/01/01	Cutler-Hammer	
APPD EER	DATE 12/01/01	TITLE DRY TYPE TRANSFORMER WIRING SCHEMATIC	
S.O. .		TYPE TRANSFORMER	.
FEDERAL ID NO	PRODUCT CODE TRANSFORMERS	REVISION 03 / DWG SIZE A	G.O. . / DWG 280B / SHEET 01 OF 01

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: V48M28F30CUDNE3
- Transformer Type: CSL3 Efficient Transformer
- Phase: 3
- kVA: 30
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- 200% Neutral: Y

Standard Values

- K-Factor: 1
- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 45
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

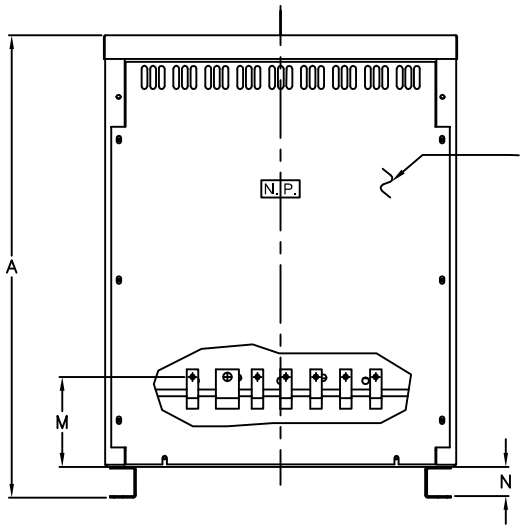
Field-Installed Accessories Included

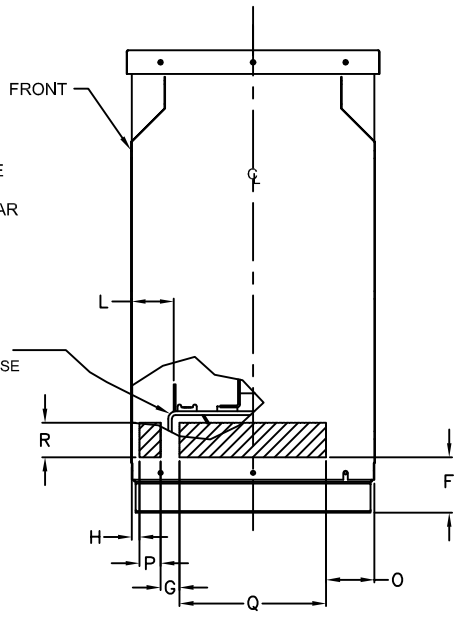
- Lug Kit: Not Included
- CUSTOM: Winding Material Copper
- CUSTOM: 200% Neutral Y
- CUSTOM: Temperature Rise 115C
- CUSTOM: Sound Reduction 0
-
-

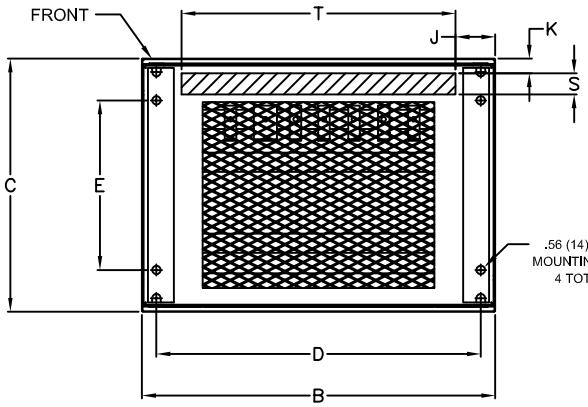
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**			
APPROVED BY:	DATE:	JOB NAME: UC Merced Science Bldg-			
		DESIGNATION: TRE			
VERSION: 4,0,0,4		TYPE: Dry-Type Transformer		DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 131	SHEET: 1 of 1

NOTE:
1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-38
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.







USE RxP AND/OR RxQ BOTH SIDES, AND SxT ON BOTTOM AS RECOMMENDED CABLE ENTRY LOCATION.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (MM)

FRAME	A	B	C	D	E	F	G	H	J	K
FR912D	29.99(762)	22.90(582)	16.42(417)	21.04(534)	11.00(279)	3.60(91)	1.24(31)	.50(13)	2.57(65)	.95(24)
	L	M	N	O	P	Q	R	S	T	
	2.72(69)	5.83(148)	1.89(48)	3.13(80)	1.36(35)	9.50(241)	2.26(57)	1.37(35)	17.77(451)	

Rev1-Oct/13

REV	DESCRIPTION	DFTR	APPD	DATE
.	.	.	.	,
.	.	.	.	,
01	ECN076863 NEW FRAME	S.BELTRAN	E.ROBLES	10/09/13

REVISIONS

PRODUCT CODE: OL

FEDERAL ID NO. ,

DFTR S.BELTRAN DATE 10/09/13

APPD E.ROBLES DATE 10/09/13

S.O. .

REVISION 01

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE .DRY TYPE TRANSFORMER OUTLINE

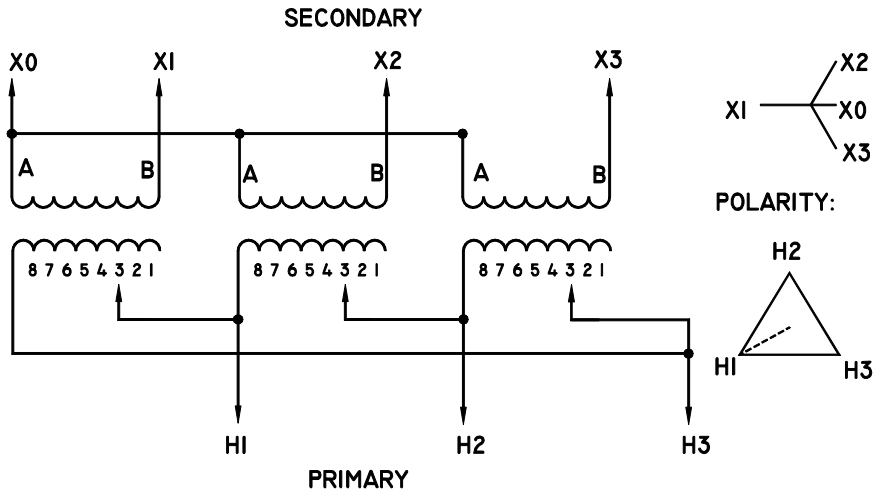
TYPE OUTLINE

G.O. .

DWG FR912D

SHEET 1 OF 01

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER-HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

DFTR HEG	DATE 12/01/01	Cutler-Hammer	
APPD EER	DATE 12/01/01	TITLE DRY TYPE TRANSFORMER WIRING SCHEMATIC	
S.O. .		TYPE TRANSFORMER	.
FEDERAL ID NO	PRODUCT CODE TRANSFORMERS	REVISION 03 / DWG SIZE A	G.O. . / DWG 280B / SHEET 01 OF 01

Dry-Type Transformers General Information

Custom Transformers must be approved by TRC - Avery Creek

This is a custom-manufactured product. Once it is released for manufacturing, it cannot be cancelled. This product cannot be returned for credit.

- Custom Transformer Style Number: V48M28T33E3
- Similar to Standard Transformer: CSL3 Efficient Transformer
- Transformer Type: 3
- Phase: 300
- kVA: 480
- Primary Volts: 208Y/120
- Secondary Volts: 115C
- Temperature Rise: Copper
- Winding Material: NEMA 2 (N3R w/opt'l weathershield)
- Enclosure Type: 60
- Frequency (Hz): N
- Easy Install: Y
- 200% Neutral

Standard Values: 1

- K-Factor: 2@+2.5%, 4@-2.5%
- TAPS: 0
- Sound Reduction (dB): 55
- NEMA ST20 Sound Level (dB): N
- NEMA TP-1 Energy Efficient: None
- Infrared Viewing Window

Field-Installed Accessories Included: Not Included

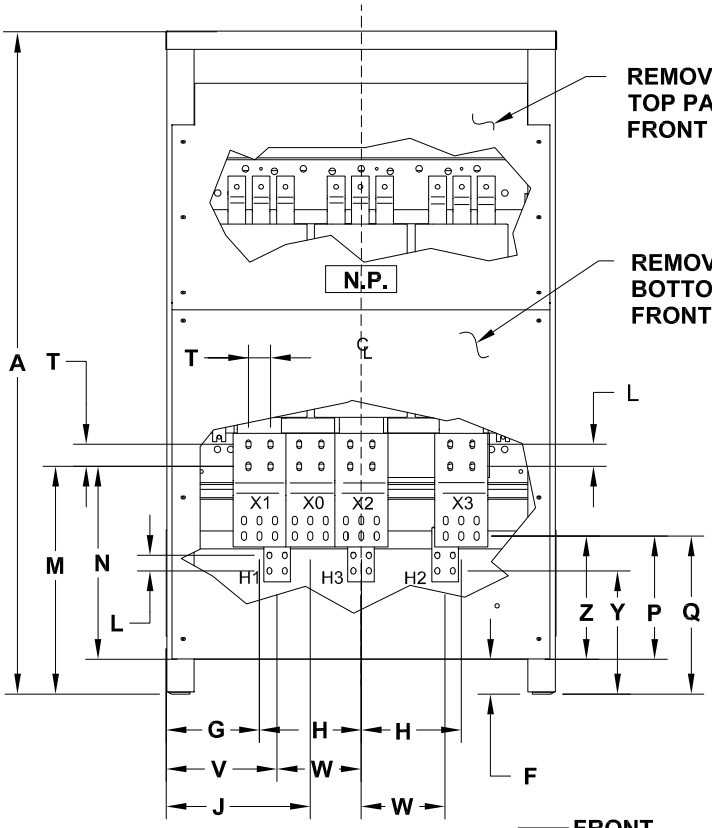
- Lug Kit
- CUSTOM: Winding Material Copper
- CUSTOM: 200% Neutral Y
- CUSTOM: Temperature Rise 115C
- CUSTOM: Sound Reduction 0
-
-

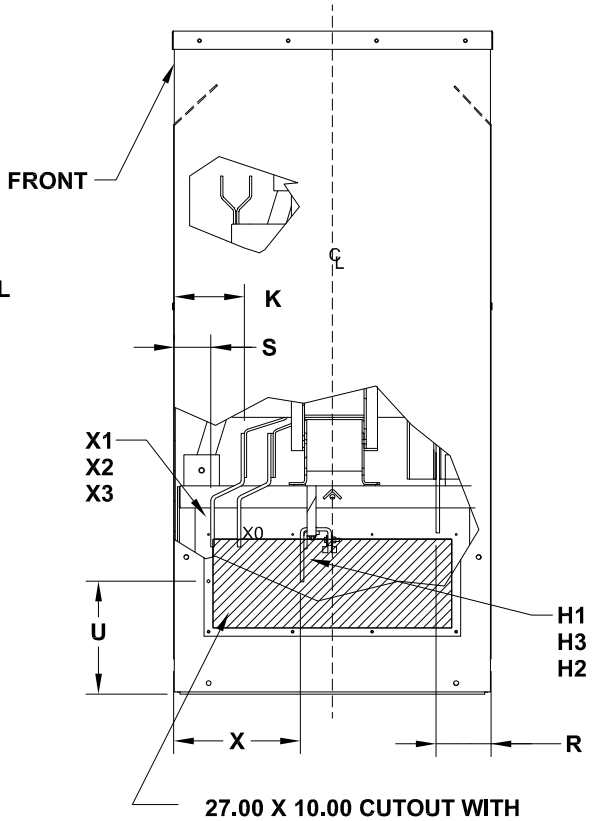
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

	PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**		
	APPROVED BY:	DATE:	JOB NAME: UC Merced Science Bldg-		
			DESIGNATION: SBETA		
	VERSION: 4,0,0,4		TYPE: Dry-Type Transformer	DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 132	SHEET: 1 of 1

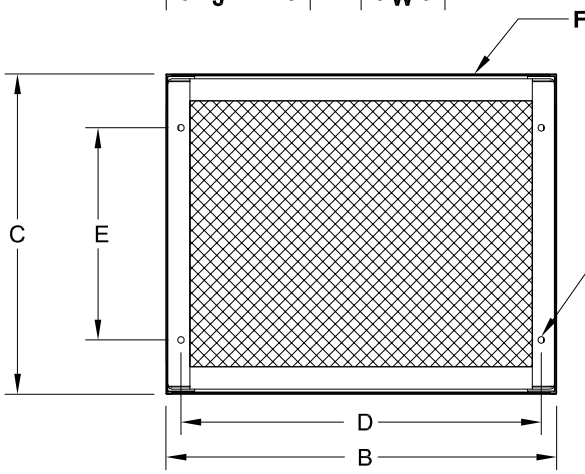
NOTE:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-35.
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220~C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.





27.00 X 10.00 CUTOUT WITH UNDRILLED COVER PLATE ON BOTH ENDS OF CASE



This Frame is not California's OSHPD certified, contact TRC for compliant frame information.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (mm)

FRAME	A	B	C	D	E	F	G	H	J	K
FR919E	75.00(1905)	44.20(1122)	36.23(920)	40.76(1035)	24.00(610)	4.00(101)	10.47(266)	11.52(293)	16.22(412)	7.94(201)
	L	M	N	P	Q	R	S	T	U	V
	1.75(44)	26.00(660)	22.00(559)	13.89(353)	17.87(454)	5.76(146)	4.13(105)	2.50(63)	12.56(319)	12.46(316)
	W	X	Y	Z						
	9.50(241)	13.75(349)	14.18(360)	10.20(259)						

REV	DESCRIPTION	DFTR	APPD	DATE
04	SE COLOCARON CORRECTAMENTE LAS ACOTACIONES ECO-047308	M.RDZ	C.BADILLO	16/04/13
02	Agregar Leyenda OSHPD ECN068605	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: OL

FEDERAL ID NO. ,

	DATE
DFTR: S.CASTRO	06/17/04
APPD: C.BADILLO	06/17/04
S.O. :	
REVISION: 04	

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE: DRY TYPE TRANSFORMER OUTLINE

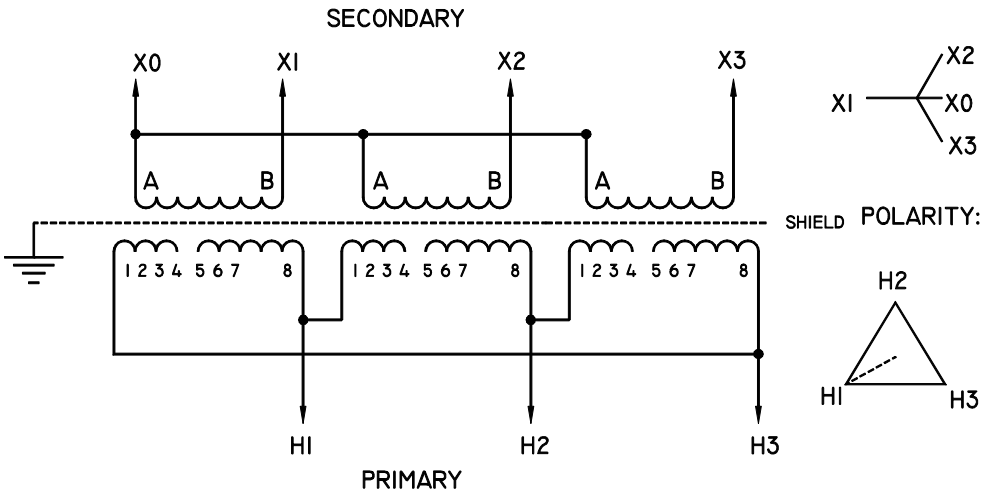
TYPE: TRANSFORMER | WIRING DIAGRAM

G.O. :

DWG: FR919E

SHEET 1 OF 1

VOLTS	CONNECT
504	4 TO 5
492	4 TO 6
480	4 TO 7
468	3 TO 6
456	3 TO 7
444	2 TO 6
432	2 TO 7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER-HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

DFTR HEG	DATE 12/01/01	Cutler-Hammer	
APPD EER	DATE 12/01/01	TITLE DRY TYPE TRANSFORMER WIRING SCHEMATIC	
S.O. .		TYPE TRANSFORMER	.
FEDERAL ID NO	PRODUCT CODE TRANSFORMERS	REVISION 03 / DWG SIZE A	G.O. . / DWG 292A / SHEET 01 OF 01

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: V48M28F30CUDNE3
- Transformer Type: CSL3 Efficient Transformer
- Phase: 3
- kVA: 30
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- 200% Neutral: Y

Standard Values

- K-Factor: 1
- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 45
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

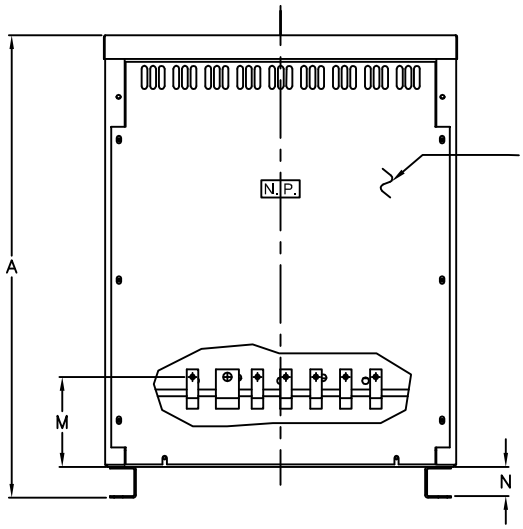
Field-Installed Accessories Included

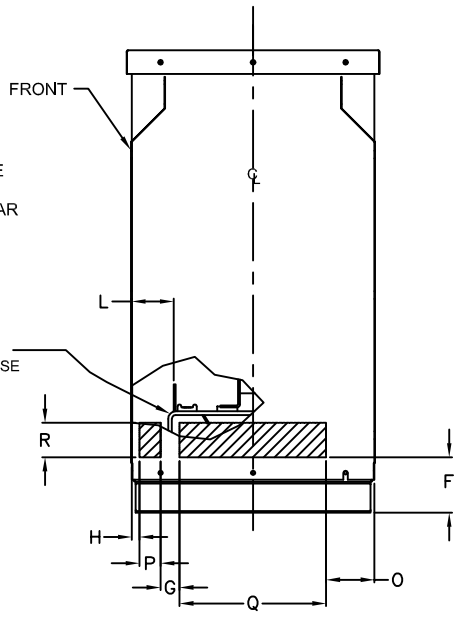
- Lug Kit: Not Included
- CUSTOM: Winding Material Copper
- CUSTOM: 200% Neutral Y
- CUSTOM: Temperature Rise 115C
- CUSTOM: Sound Reduction 0
-
-

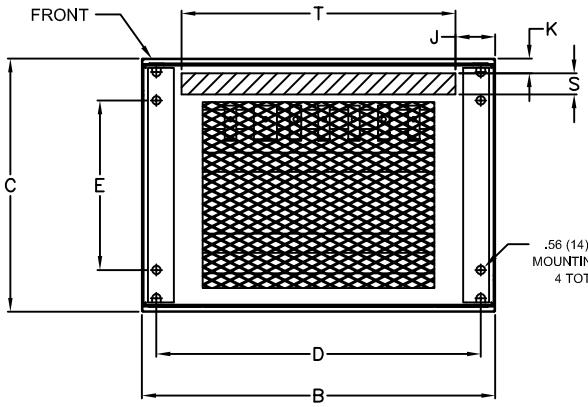
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**			
APPROVED BY:	DATE:	JOB NAME: UC Merced Science Bldg-			
		DESIGNATION: S4WTA			
VERSION: 4,0,0,4		TYPE: Dry-Type Transformer		DRAWING TYPE: Final	
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 133	SHEET: 1 of 1

NOTE:
1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-38
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.







USE RxP AND/OR RxQ BOTH SIDES, AND SxT ON BOTTOM AS RECOMMENDED CABLE ENTRY LOCATION.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (MM)

FRAME	A	B	C	D	E	F	G	H	J	K
FR912D	29.99(762)	22.90(582)	16.42(417)	21.04(534)	11.00(279)	3.60(91)	1.24(31)	.50(13)	2.57(65)	.95(24)
	L	M	N	O	P	Q	R	S	T	
	2.72(69)	5.83(148)	1.89(48)	3.13(80)	1.36(35)	9.50(241)	2.26(57)	1.37(35)	17.77(451)	

Rev1-Oct/13

REV	DESCRIPTION	DFTR	APPD	DATE
.	.	.	.	,
.	.	.	.	,
01	ECN076863 NEW FRAME	S.BELTRAN	E.ROBLES	10/09/13

REVISIONS

PRODUCT CODE: OL

FEDERAL ID NO. ,

DFTR S.BELTRAN DATE 10/09/13

APPD E.ROBLES DATE 10/09/13

S.O. .

REVISION 01

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE .DRY TYPE TRANSFORMER OUTLINE

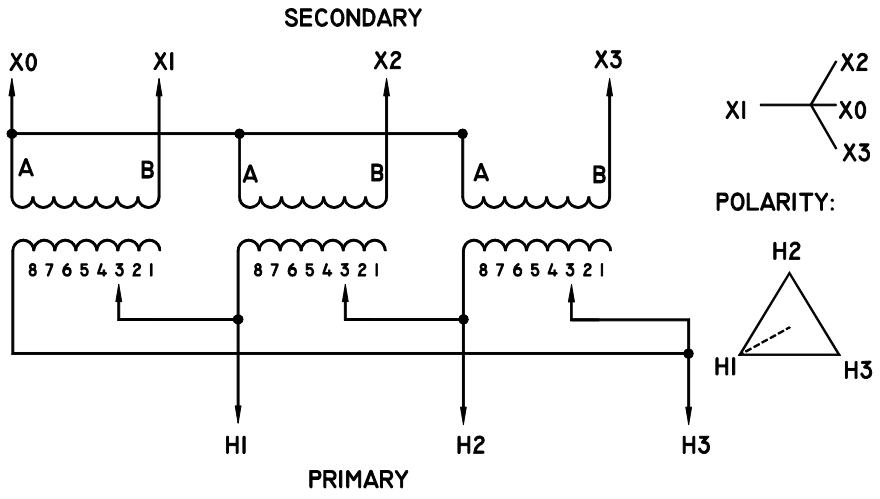
TYPE OUTLINE

G.O. .

DWG FR912D

SHEET 1 OF 01

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER-HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

DFTR HEG	DATE 12/01/01	Cutler-Hammer	
APPD EER	DATE 12/01/01	TITLE DRY TYPE TRANSFORMER WIRING SCHEMATIC	
S.O. .		TYPE TRANSFORMER	.
FEDERAL ID NO	PRODUCT CODE TRANSFORMERS	REVISION 03 / DWG SIZE A	G.O. . / DWG 280B / SHEET 01 OF 01

Dry-Type Transformers General Information

- Standard Transformer Catalog Number: X48M28F22CUE3NON
- Transformer Type: Harmonic Mitigating Transformer
- Phase: 3
- kVA: 225
- Primary Volts: 480
- Secondary Volts: 208Y/120
- Temperature Rise: 115C
- Winding Material: Copper
- Enclosure Type: NEMA 2 (N3R w/opt'l weathershield)
- Frequency (Hz): 60
- Easy Install: N
- HMT Type: 0 degree
- Electrostatic Shield: Y
- 200% Neutral: Y
- Frame: 919X
- Wiring Diagram: 201X
- Weight (lbs.): 3657
- Impedance (%): 7.28
- UL Listed: Y

Standard Values

- TAPS: 2@+2.5%, 4@-2.5%
- Sound Reduction (dB): 0
- NEMA ST20 Sound Level (dB): 55
- NEMA TP-1 Energy Efficient: N
- Infrared Viewing Window: None

Field-Installed Accessories Included

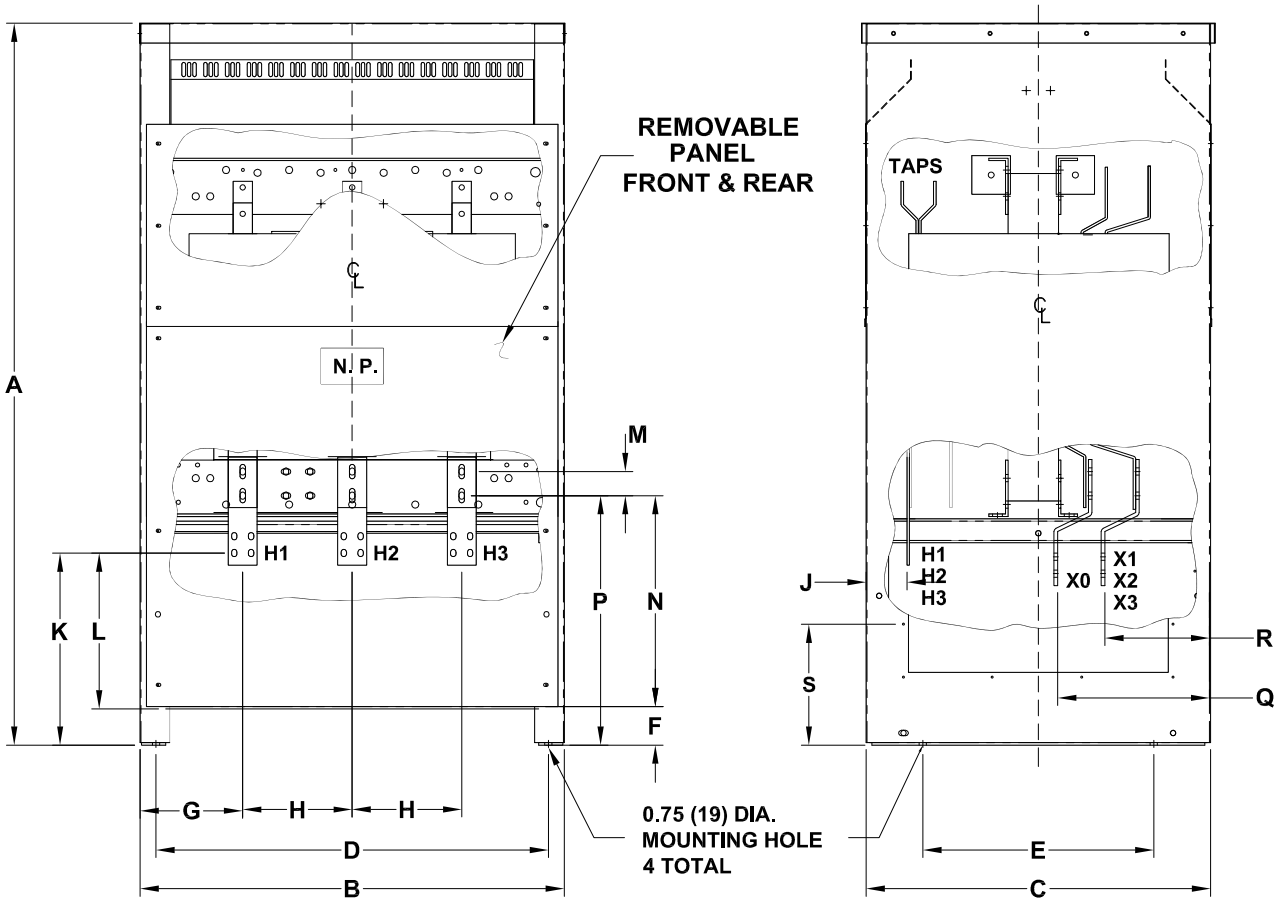
- Lug Kit: Not Included

The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

PREPARED BY: Al Thompson	DATE: 2/24/2014	**Eaton Corporation**			
APPROVED BY	DATE	JOB NAME: UC Merced Science Bldg-			
		DESIGNATION: 3WTA, 2WTA,			
VERSION: 4,0,0,4		TYPE: Dry-Type Transformer	DRAWING TYPE: Final		
NEG-ALT Number: LT161206Y103-C016	REVISION: 0	DWG SIZE: A	G.O.: MSR0005766	ITEM: 135	SHEET: 1 of 1

NOTES:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-35.
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.



THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN in(mm)

FRAME	A	B	C	D	E	F	G	H
FR919X	74.98(1905)	44.06(1119)	35.76(908)	40.76(1035)	24.00(610)	4.00(102)	10.65(271)	11.38(289)
	J	K	L	M	N	P	Q	R
	4.24(108)	19.94(507)	16.19(411)	2.50(64)	21.91(556)	25.91(658)	15.79(401)	10.88(276)
	S							
	15.20(386)							

This Frame is not California's OSHPD certified, contact TRC for compliant frame information.

REV	DESCRIPTION	DFTR	APPD	DATE
	.	.	.	
06	CLEAN DWG & UPDATE REVISION ECO-049980	M. RDZ	C.BADILLO	16/04/13
03	Agregar Leyenda OSHPD ECN068605	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: TRANSFORMER | FEDERAL ID NO. ,

DFTR: J.C.SOTO | DATE: 07/07/10

APPD: C.BADILLO | DATE: 07/07/10

S.O. .

REVISION: 06

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE: DRY TYPE TRANSFORMER OUTLINE

TYPE: DRY TIPE TRASFORMER | OUTLINE

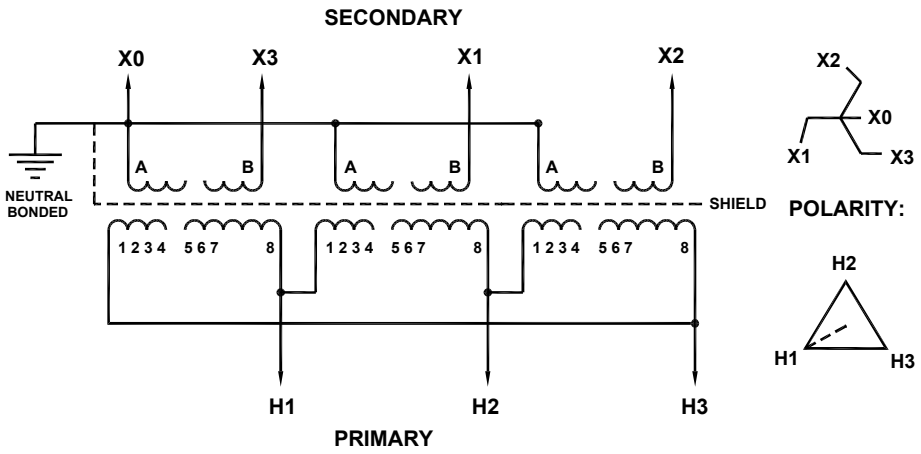
G.O. .

DWG: FR919X

SHEET: 1 OF 01

GO/NEG-Alt-Date:	Job Name:	
MSR0005766-C016-2/24/2014	UC Merced Science Bldg-	
Item Number: 135	**Catalog Number:** X48M28F22CUE3NON	**Designation:** 3WTA, 2WTA,

VOLTS	CONNECT
504	4 TO 5
492	4 TO 6
480	4 TO 7
468	3 TO 6
456	3 TO 7
444	2 TO 6
432	2 TO 7



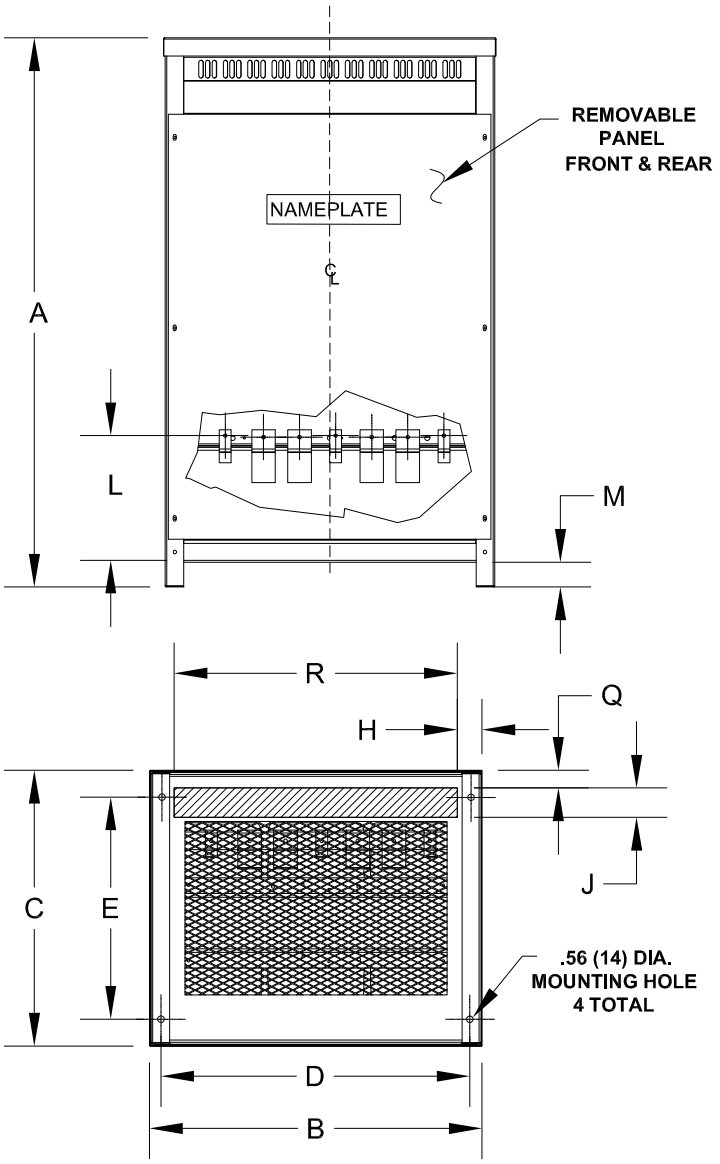
THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER-HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.

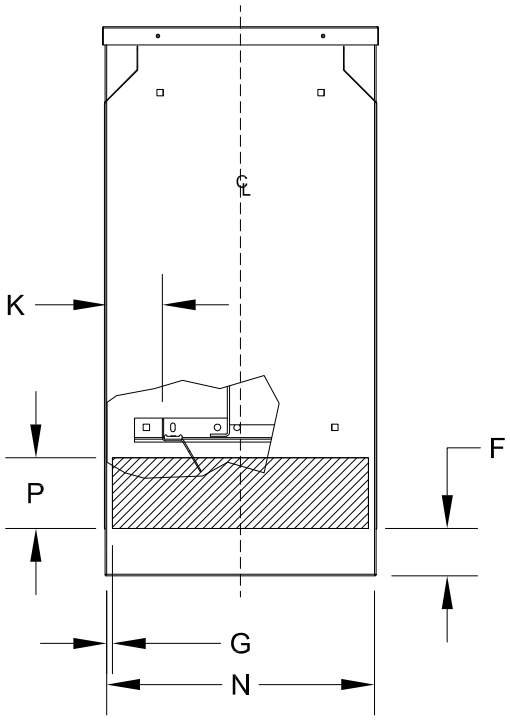
DFTR: A. CISNEROS	DATE: 03/22/02	Cutler-Hammer	Juarez, Mexico
APPD: G. LOPEZ	DATE: 03/22/02	TITLE: TRANSFORMER WIRING DIAGRAM #201X	
S.O.		TYPE: DRY TYPE DISTRIBUTION TRANSFORMERS	DRAWING TYPE: WIRING
FEDERAL ID NO	PRODUCT CODE: TRANSFORMERS	REVISION: 01 / DWG SIZE: A	G.O. / DWG: 201X / SHEET: 01 OF 01

GO/NEG-Alt-Date:		Job Name:
MSR0005766-C016-2/24/2014		UC Merced Science Bldg-
Item Number:	**Catalog Number:**	**Designation:**
135	X48M28F22CUE3NON	3WTA, 2WTA,

NOTE:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-19
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.





USE PxN BOTH SIDES AND RxJ ON BOTTOM AS RECOMMENDED CABLE ENTRY LOCATION.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (mm)

FRAME	A	B	C	D	E	F	G	H	J	K
FR916A	46.58(1183)	28.22(717)	23.42(595)	26.29(668)	18.82(478)	4.01(102)	.50(13)	2.09(53)	2.50(64)	4.94(125)
	L	M	N	P	Q	R				
	12.84(326)	2.10(53)	23.00(584)	6.00(152)	1.50(38)	24.00(610)				

REV	DESCRIPTION	DFTR	APPD	DATE
12	VERIFICACION DE DIMENSIONES MOL076933	J.C.SOTO	C.ROMO	14/OCT/13
11	REMOVER LA LEYENDA OSHPD. ECN076764.	M.RDZ	C.BADILLO	16/04/13
10	SE COLOCARON CORRECTAMNTE LAS ACOTACIONES ECO-047308	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: OL

FEDERAL ID NO. ,

DFTR: S.BELTRAN DATE: 2/8/2010

APPD: C.BADILLO DATE: 2/6/2010

S.O. .

REVISION: 12

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE: DRY TYPE TRANSFORMER OUTLINE

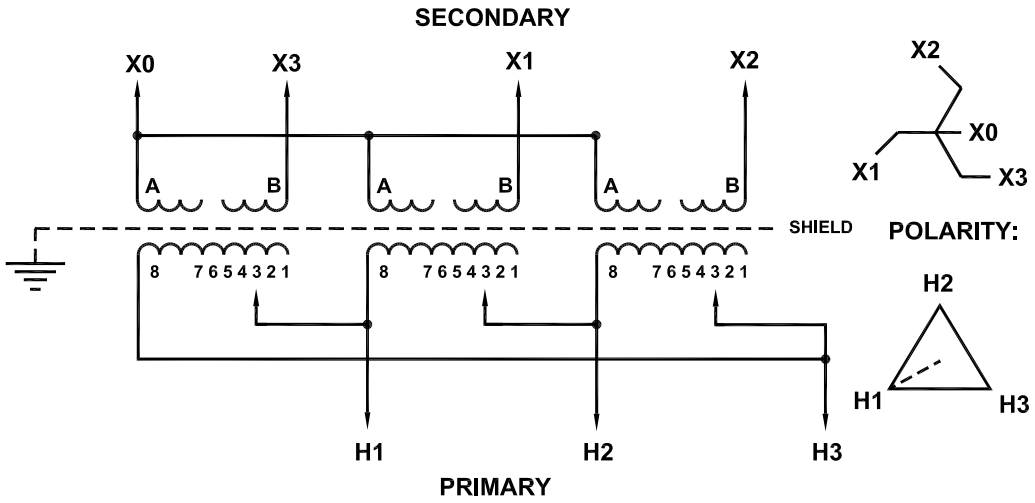
TYPE: TRANSFORMER — OUTLINE

G.O. . MSR0005766-137A

DWG: FR916A

SHEET 1 OF 1

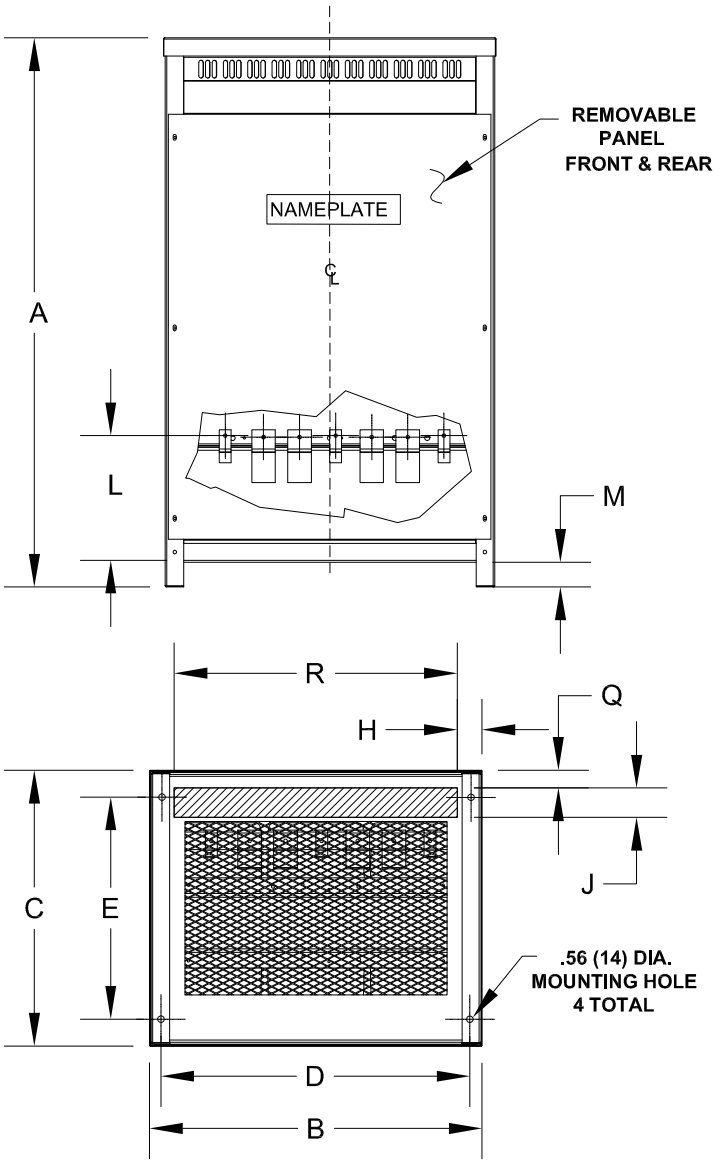
VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7

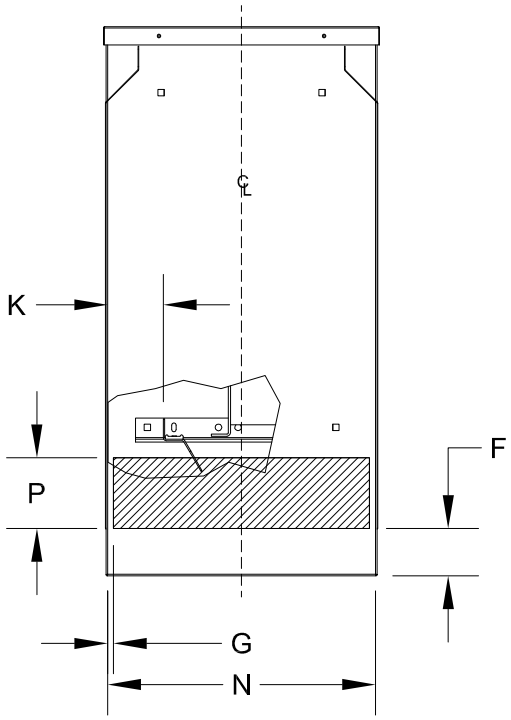


THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER–HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.		DFTR A. CISNEROS	DATE 03/22/02	Cutler–Hammer Juarez, Mexico			
		APPD G. LOPEZ	DATE 03/22/02	TITLE TRANSFORMER WIRING DIAGRAM #200X			
		S.O.		TYPE DRY TYPE DISTRIBUTION TRANSFORMERS		DRAWING TYPE WIRING	
FEDERAL ID NO	PRODUCT CODE TRANSFORMERS	REVISION 02	DWG SIZE A	G.O. MSR0005766-137A	DWG 200X		SHEET 01 OF 01

NOTE:

1. ALL UNITS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE NEMA, UL, ANSI, AND IEEE STANDARDS.
2. DRY-TYPE VENTILATED, CLASS AA, NEMA TYPE 2 ENCLOSURE.
3. FOR NEMA 3R OUTDOOR APPLICATION, USE WEATHERSHIELD # WS-19
4. TRANSFORMERS ARE FLOOR MOUNTED.
5. 220°C CLASS INSULATION SYSTEM.
6. PAINT COLOR IS ANSI #61.
7. ALUMINUM UNITS HAVE ALUMINUM WINDINGS AND TERMINATIONS. COPPER UNITS HAVE COPPER WINDINGS AND TERMINATIONS.





USE PxN BOTH SIDES AND RxJ ON BOTTOM AS RECOMMENDED CABLE ENTRY LOCATION.

THIS DIMENSION DRAWING IS FOR REFERENCE ONLY. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION.

DIMENSIONS IN INCHES (mm)

FRAME	A	B	C	D	E	F	G	H	J	K
FR916A	46.58(1183)	28.22(717)	23.42(595)	26.29(668)	18.82(478)	4.01(102)	.50(13)	2.09(53)	2.50(64)	4.94(125)
	L	M	N	P	Q	R				
	12.84(326)	2.10(53)	23.00(584)	6.00(152)	1.50(38)	24.00(610)				

REV	DESCRIPTION	DFTR	APPD	DATE
12	VERIFICACION DE DIMENSIONES MOL076933	J.C.SOTO	C.ROMO	14/OCT/13
11	REMOVER LA LEYENDA OSHPD. ECN076764.	M.RDZ	C.BADILLO	16/04/13
10	SE COLOCARON CORRECTAMNTE LAS ACOTACIONES ECO-047308	ANAVA	C.BADILLO	12/10/12

REVISIONS

PRODUCT CODE: OL

FEDERAL ID NO. ,

DFTR: S.BELTRAN — DATE: 2/8/2010

APPD: C.BADILLO — DATE: 2/6/2010

S.O. .

REVISION: 12

THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON CORPORATION. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.

TITLE: DRY TYPE TRANSFORMER OUTLINE

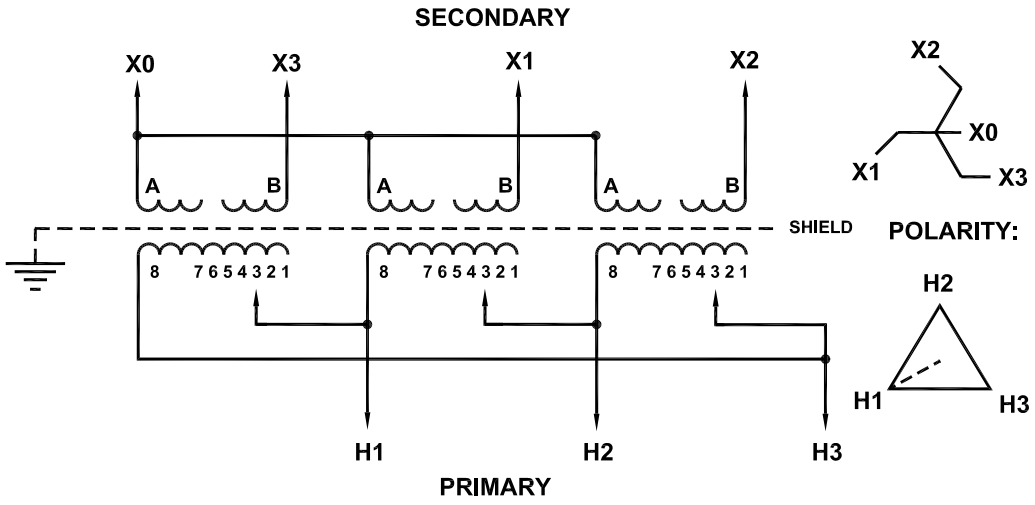
TYPE: TRANSFORMER — OUTLINE

G.O. MSR0005766-137AA

DWG FR916A

SHEET 1 OF 1

VOLTS	TAP
504	1
492	2
480	3
468	4
456	5
444	6
432	7



THE INFORMATION ON THIS DOCUMENT IS CREATED BY CUTLER–HAMMER. IT IS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT IS SUPPLIED.		DFTR A. CISNEROS	DATE 03/22/02	Cutler–Hammer Juarez, Mexico			
		APPD G. LOPEZ	DATE 03/22/02	TITLE TRANSFORMER WIRING DIAGRAM #200X			
		S.O.		TYPE DRY TYPE DISTRIBUTION TRANSFORMERS		DRAWING TYPE WIRING	
FEDERAL ID NO	PRODUCT CODE TRANSFORMERS	REVISION 02	DWG SIZE A	G.O. MSR0005766-137AA	DWG 200X		SHEET 01 OF 01

Instruction Data

Instructions for Installation, Operation, and Maintenance of Dry-Type Distribution Transformers

Instrucciones para la instalación, operación y mantenimiento de los Transformadores de Distribución Tipo Seco

CONTENTS

Description

Section 1: Introduction **2**
Section 2: Receiving **2**
Section 3: Lifting and Handling **2**
Section 4: Storage Prior to Energization **4**
Section 5: Location and Mounting **4**
Section 6: How to Reduce Sound Transmission **4**
Section 7: Connecting Cables to Transformer Terminations **5**
Section 8: Energization and Operation Guidelines **5**
Section 9: Maintenance and Repair **6**
Section 10: Safety **7**
Section 11: Disclaimer of Warranties and Limitation of Liabilty **7**

Figures

1. Typical Ventilated Transformer 3
2. Typical Encapsulated Transformer 3

Tables

1. NEMA Average Sound Level 4

CONTENIDO

Descripción

Sección 1: Introducción **2**
Sección 2: Arrivo **2**
Sección 3: Izado y manejo **2**
Sección 4: Almacenaje previo a conexión **4**
Sección 5: Localización y montaje **4**
Sección 6: Como reducir la tranmisión de sonido **4**
Sección 7: Conexión de cables a las terminales del transformador **5**
Sección 8: Guía de energizado y operación **5**
Sección 9: Mantenimiento y reparación **6**
Sección 10: Seguridad **7**
Sección 11: Límites en responsabilidad y garantía **7**

Figuras

1. Transformador típico ventilado 3
2. Transformador típico encapsulado 3

Tablas

1. Nivel de sonido promedio de N.E.M.A 4

⚠ WARNING

ALWAYS TURN OFF THE POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE. FAILURE TO DO SO COULD RESULT IN SERIOUS PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE.

1. INTRODUCTION

Transformers should be installed and serviced only by competent personnel familiar with good safety practices. These instructions are written for such personnel and are not intended as a substitute for adequate training and experience in the use of transformers. Refer to NEMA Standard ST-20 for more information on general application requirements.

2. RECEIVING

All dry-type distribution transformers are completely assembled and carefully tested at the factory before being shipped.

Upon receipt of the transformer:

- Inspect it for possible shipping damage.
- Check the bill of lading for possible shortages.

If shipping damage occurs, a claim should immediately be filed with the carrier. Notify the local sales office with the carrier's name and the extent of the damage.

3. LIFTING AND HANDLING

⚠ WARNING

FAILURE TO PROPERLY LIFT THE TRANSFORMER MAY CAUSE DAMAGE TO THE PRODUCT, OTHER PROPERTY, OR RESULT IN PERSONAL INJURY.

ALWAYS MOVE A VENTILATED DESIGN TRANSFORMER IN AN UPRIGHT POSITION ONLY. FAILURE TO DO SO COULD RESULT IN TRANSFORMER DAMAGE.

Ventilated design transformers:

- Use spreaders with lifting chains or slings connected to the holes located on both sides panels or remove the top cover to access the lifting holes on each end of the top of the core-coil assembly.

OR

- Lift the unit with a fork lift when a pallet is provided.
- For further information see Figure 1 on Page 3.

Encapsulated design transformers (above 2 kVA):

- Lift the transformer by its lifting brackets.

OR

- Lift the unit with a fork lift when a pallet is provided.
- For further information see Figure 2 on Page 3.

⚠ ADVERTENCIA

SIEMPRE DESENERGICE ESTE EQUIPO ANTES DE TRABAJAR EN ÉL. EL NO HACERLO PUEDE CAUSAR LESIONES PERSONALES SERIAS, MUERTE O DAÑOS A LA PROPIEDAD.

1. INTRODUCCION

Los transformadores deben ser instalados y mantenidos por personal calificado y conocedor de prácticas de seguridad. Estas instrucciones van dirigidas a ellos sin intención de sustituir la adecuada capacitación y experiencia en transformadores. Consulte el estándar N.E.M.A. (National Electrical Manufacturers Association E.U.A.) ST-20 para requisitos de aplicaciones generales.

2. ARRIVO

Todos los transformadores de distribución tipo seco son completamente ensamblados y cuidadosamente probados en la fábrica antes de ser enviados.

Al recibir el transformador:

- Inspeccione si se ocasionaron daños debido al transporte.
- Verifique las partes para posibles faltantes.

En caso de ocurrir daño por transporte, levante un reporte con el transportista. Avise a la oficina local de ventas, provea el nombre del transportista y el alcance del daño.

3. IZADO Y MANEJO

⚠ ADVERTENCIA

LEVANTAR Y/O MOVER EL TRANSFORMADOR INCORRECTAMENTE PUEDE AFECTARLO, CAUSAR DAÑOS A LA PROPIEDAD O LESIONES PERSONALES.

TRASLADE LAS UNIDADES VENTILADAS SIEMPRE EN POSICIÓN VERTICAL. EL NO HACERLO DAÑARÁ EL TRANSFORMADOR.

Transformadores de Diseño Ventilado:

- Para izar use travesaño con cadena por los orificios redondos ubicados en los páneles laterales o por dentro de la unidad en la parte superior del ensamble del núcleo (remueva la tapa superior).

o

- Use montacargas si el transformador está sobre una tarima.
- Para referencia vea la Figura 1 en la página 3.

Transformadores de Diseño Encapsulado (mayores de 2 kVA):

- Levante la unidad por las ménsulas.

o

- Levante la unidad con montacargas cuando se provea tarima.
- Para referencia, vea la Figura 2 en la página 3.

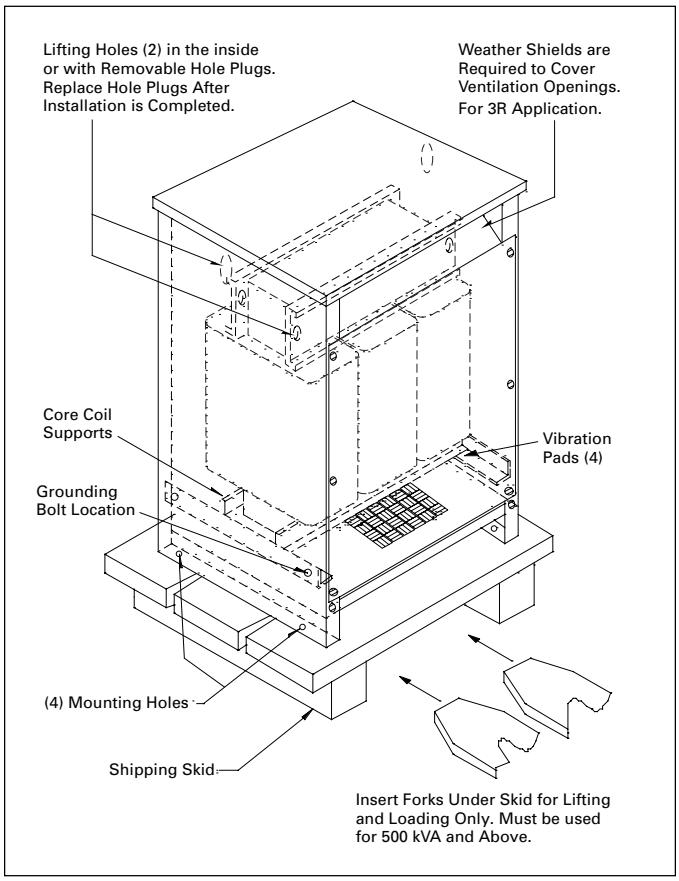

Lifting Holes (2) in the inside or with Removable Hole Plugs. Replace Hole Plugs After Installation is Completed.
Weather Shields are Required to Cover Ventilation Openings. For 3R Application.
Core Coil Supports
Vibration Pads (4)
Grounding Bolt Location
(4) Mounting Holes
Shipping Skid
Insert Forks Under Skid for Lifting and Loading Only. Must be used for 500 kVA and Above.

Figure 1 Typical Ventilated Transformer.

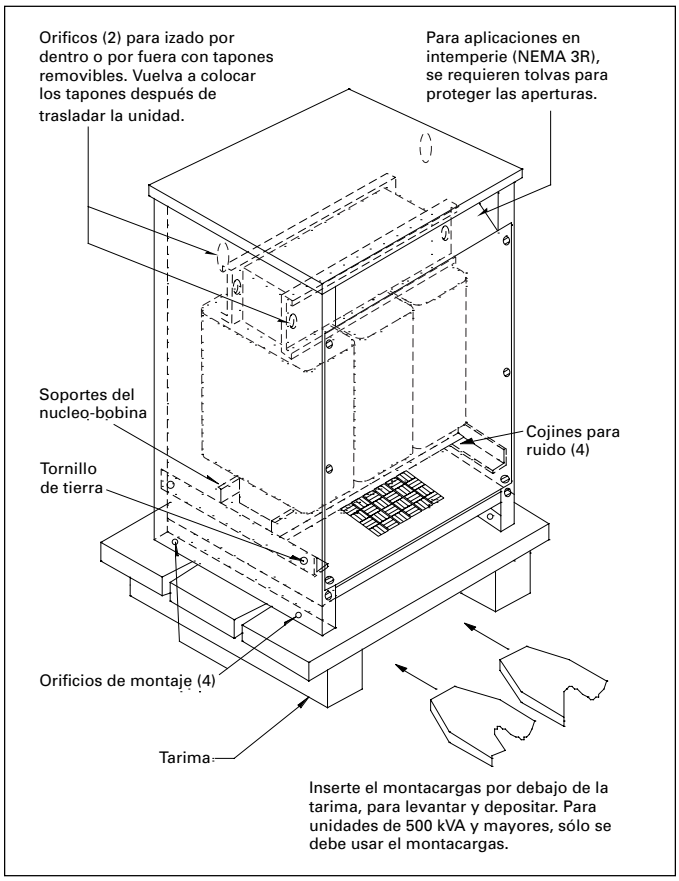

Orificos (2) para izado por dentro o por fuera con tapones removibles. Vuelva a colocar los tapones después de trasladar la unidad.
Para aplicaciones en intemperie (NEMA 3R), se requieren tolvas para proteger las aperturas.
Soportes del nucleo-bobina
Cojines para ruido (4)
Tornillo de tierra
Orificios de montaje (4)
Tarima
Inserte el montacargas por debajo de la tarima, para levantar y depositar. Para unidades de 500 kVA y mayores, sólo se debe usar el montacargas.

Figura 1 Transformador típico ventilado.

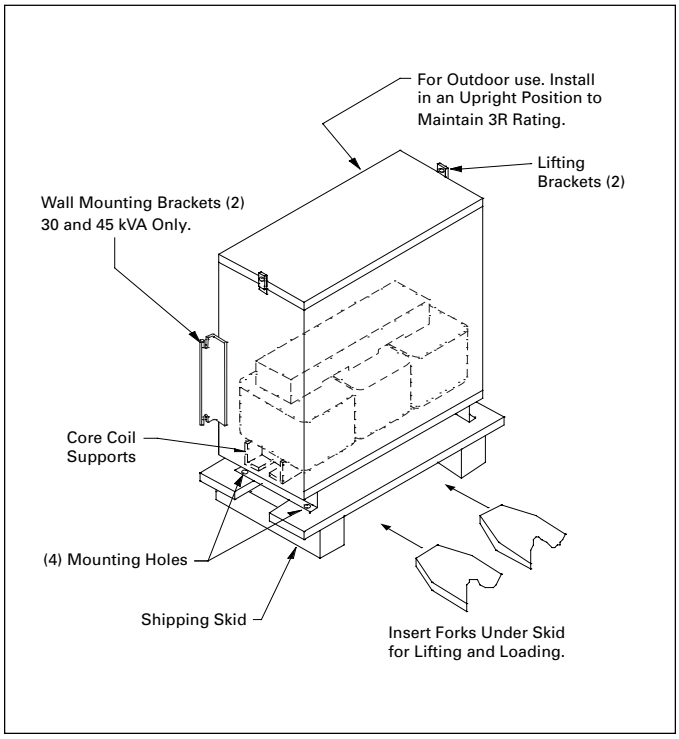

For Outdoor use. Install in an Upright Position to Maintain 3R Rating.
Lifting Brackets (2)
Wall Mounting Brackets (2) 30 and 45 kVA Only.
Core Coil Supports
(4) Mounting Holes
Shipping Skid
Insert Forks Under Skid for Lifting and Loading.

Figure 2 Typical Encapsulated Transformer.

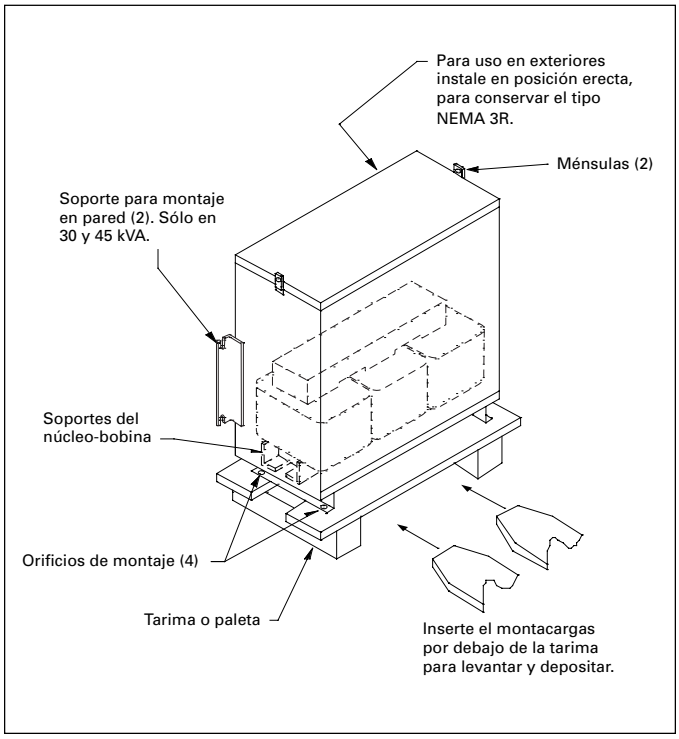

Para uso en exteriores instale en posición erecta, para conservar el tipo NEMA 3R.
Ménsulas (2)
Soporte para montaje en pared (2). Sólo en 30 y 45 kVA.
Soportes del núcleo-bobina
Orificios de montaje (4)
Tarima o paleta
Inserte el montacargas por debajo de la tarima para levantar y depositar.

Figura 2 Transformador típico encapsulado.

4. STORAGE PRIOR TO ENERGIZATION

Store dry-type transformers in their original shipping cartons indoors in a clean, dry, temperature stable environment.

5. LOCATION AND MOUNTING

All dry-type transformers:

- Locate the transformer in an area where the transformer is easily accessible and serviceable.
- Install the unit in accordance with the requirements of Article 450 of the National Electrical Code and other appropriate local codes.
- Install the unit in a protected electrical circuit. Do not subject the transformer to voltage surges unless it is properly protected.
- Transformers are not tamper proof and should be installed in secured locations away from all unauthorized personnel.
- Locate unit in a well ventilated area free from excessive moisture, dust, dirt, or explosive/corrosive gases or vapors.
- Locate ventilated units at least 6 inches from front and rear structure to assure proper air circulation. Avoid any obstruction to the bottom and top panel ventilation openings.
- Install transformer on a surface strong enough to support the weight of the unit.
- Install ventilated transformers in an upright position only.
- Encapsulated transformers for indoor use may be mounted in any position. For outdoor application encapsulated transformers must be installed in an upright position to maintain a 3R rating.

6. HOW TO REDUCE SOUND TRANSMISSION

All transformers make some sound mainly due to the vibration generated in its core by alternating flux. NEMA ST-20 defines the sound levels for dry-type distribution transformers as shown in Table 1.

Table 1

kVA	*NEMA Average Sound Level (dB)①*	
	1.2 kV Class	*Above 1.2 kV*
0-9	40	45
10-50	45	50
51-150	50	55
151-300	55	58
301-500	60	60
501-700	62	62
701-1000	64	64
1001-1500	65	65

① Applies to general purpose transformers only.

4. ALMACENAJE PREVIO A CONEXION

Mantenga los transformadores en su empaque original, en interiores secos, limpios y a temperatura estable.

5. LOCALIZACION Y MONTAJE

Transformadores de Diseño Ventilado y Encapsulado:

- Coloque el transformador donde pueda ser inspeccionado y tener acceso a él en cualquier momento.
- Instale la unidad de acuerdo a lo provisto en el artículo 450 del N.E.C. (Código Nacional Eléctrico E.U.A.) y/o los códigos o normas locales aplicables.
- Instale la unidad en un circuito eléctrico protegido. No exponga el transformador a sobrevoltajes a menos que esté adecuadamente protegido.
- Los transformadores son fácilmente accesados y por ello deben ser instalados en lugares seguros, lejos de toda persona no autorizada.
- Ubique las unidades en un área ventilada, libre de humedad excesiva, polvo, suciedad o vapores o gases explosivos o corrosivos.
- Ubique el transformador ventilado retirado un mínimo de 15 cm. de estructuras frontal y posterior para asegurar la apropiada circulación de aire. Evite cualquier obstrucción a las aperturas de ventilación de los páneles superior e inferior.
- Instale el transformador sobre una superficie suficientemente rígida para soportar el peso de la unidad.
- Instale los transformadores ventilados en posición vertical sólamente.
- Los transformadores encapsulados para uso en interiores pueden ser montados en cualquier posición. Para uso en exteriores deben ser instalados sólo en posición vertical para mantener la nominación N.E.M.A. 3R.

6. COMO REDUCIR LA TRANSMISION DE SONIDO

Todos los transformadores generan sonido principalmente por la vibración generada en el núcleo por el flujo magnético alternante. NEMA ST-20 define los máximos niveles promedio de sonido para transformadores de distribución tipo seco como se muestra en la Tabla 1.

Tabla 1

kVA	*Nivel de sonido promedio de N.E.M.A. (dB)①*	
	Clase 1.2 kV	*Mayores de Clase 1.2 kV*
0-9	40	45
10-50	45	50
51-150	50	55
151-300	55	58
301-500	60	60
501-700	62	62
701-1000	64	64
1001-1500	65	65

① Aplica a transformadores de uso general solamente.

All general purpose dry-type distribution transformers are designed to meet NEMA ST-20 established sound levels. However, to minimize the potential for sound transmission to surrounding structures and sound reflection, follow these instructions:

1. Mount the transformer away from corners, walls or ceilings. For installation which must be near a corner, use sound absorbing materials on the walls and ceiling.
2. Use flexible conduit to make the connections to the transformers.
3. Locate the transformers as far away as possible from areas where sound is objectionable.

7. CONNECTING CABLES TO TRANSFORMER TERMINATIONS

Any standard cable of the conductor size specified in N.E.C. Section 310 can be used. Recommended external cable should be rated 90ºC (sized at 75% ampacity) for encapsulated designs and 75ºC for ventilated designs. Connectors should be selected on the basis of the type cable and cable size used to wire the specific transformer.

- Remove access panels to wiring compartment.
- Install conduit and wiring through sides and/or bottom of transformer case into wiring compartment.
- Top entry of cable should be avoided.
- Clean all electrical joints.
- Connect primary wiring first to correct terminal as shown on the transformer nameplate.
- Insulate any unused tap leads and verify tap connections are tight.
- Energize unit and measure secondary voltage to verify correct voltage.
- De-energize primary circuit and connect secondary wiring to terminations in accordance with nameplate wiring diagram.
- Make sure all connections are tight.
- Re-install access panels.

Grounding

As required by the National Electrical Code, connect a ground cable to the transformer enclosure. The transformer core is grounded to enclosure.

8. ENERGIZATION AND OPERATION GUIDELINES

For ventilated designs only, if moisture is evident, the unit should be dried out by placing it in an oven or by blowing heated air over it. The temperature should not exceed 110° C (230ºF) to prevent damage to wiring insulation.

When the tests and connections are complete, the transformer may be energized.

Todos los transformadores de distribución tipo seco son diseñados para cumplir con los niveles de sonido establecidos por NEMA, norma ST-20. Aún así para minimizar la transmisión potencial de sonido y su reflexión, siga estas instrucciones:

1. Monte el transformador alejado de esquinas, paredes y techos. En caso contrario, use materiales absorbentes de sonido en las paredes
2. Use tubo conduit flexible para hacer las conexiones al transformador.
3. Coloque la unidad lo más retirada posible de áreas en las que el nivel de ruido sea un factor limitante.

7. CONEXION DE CABLES A LAS TERMINALES DEL TRANSFORMADOR

Puede usar cualquier cable conductor aislado, del calibre especificado por N.E.C. o los códigos aplicables. El cable de uso exterior recomendado debe ser para 90ºC (calculado al 75% de ampacidad) en diseños encapsulados, y para 75ºC en diseños ventilados. Los conectores deberán seleccionarse de acuerdo al tipo y al calibre del cable conductor utilizado en la conexión al transformador específico.

- Remueva los páneles o tapas de acceso al compartimiento de alambrado.
- Instale tubo conduit y el cableado por el fondo o los lados del gabinete del transformador hacia el compartimiento de terminales.
- Evite el acceso de cable por la parte superior del gabinete de diseños ventilados.
- Limpie todas las uniones eléctricas.
- Conecte primero la sección primaria a la terminal correcta, según se muestre en la placa de datos.
- Aisle todo tap (derivación) sin usar y revise que los taps conectados estén apretados.
- Energice la conexión primaria y mida el voltaje en la sección secundaria, verificando que sea el voltaje correcto.
- Desenergice y prepare la conexión en la sección secundaria de acuerdo al diagrama de la placa de datos.
- Asegúrese que todas las conexiones han sido apretadas.
- Reinstale los páneles o tapas de acceso al compartimiento de conductores.

Conexión a tierra (potencial cero)

Conecte el cable de tierra física al gabinete del transformador, así como lo requiere el N.E.C.. El núcleo del transformador ya ha sido aterrizado al gabinete.

8. GUIA DE ENERGIZADO Y OPERACION

Para diseños ventilados solamente: si existe humedad evidente, seque la unidad ya sea dentro de un horno o soplando aire caliente por ella. La temperatura no debe exceder 110°C (230°F) para prevenir daños al alambrado.

Una vez probado el transformador y terminadas las conexiones, el transformador puede ser energizado.

Do not make any connections other than those shown on the nameplate or diagram. Do not change connections or taps while the unit is energized.

This dry-type transformer was built and tested in accordance with applicable standards of American National Standards Institute and National Electrical Manufacturers's Association.

The following operations guides are excerpts from these standards.

⚠ WARNING

IT IS IMPORTANT TO FOLLOW THE GUIDELINES SET FORTH BELOW. FAILURE TO DO SO COULD RESULT IN SEVERE PERSONAL INJURY, DEATH, PROPERTY DAMAGE, OR REDUCED TRANSFORMER LIFE.

The maximum allowed overvoltage is 5% above rated secondary voltage at rated kVA load with load power factor at least 80%. If the transformer is energized while the secondary is not connected to a load, then the voltage applied to the primary must not result in a voltage exceeding 110% of the rated secondary voltage.

Continuous overload capability is not deliberately designed into general purpose transformers. For short term overload capability, See ANSI C57.96-01.250 for guidelines and limitations.

Transformers depend entirely on the surrounding air for adequate ventilation. The ambient should not exceed 40ºC (104ºF) and the average temperature of the air for any 24 hour period should not exceed 30ºC (86ºF). For operation at higher ambients, transformer loading should be reduced 0.6% of rated KVA for each degree above 30ºC average ambient to a maximum of 50ºC (122ºF).

The transformer may be connected in parallel with other transformers if the phase angle shift is the same; phase rotation is the same; transformers' turn ratios and voltage ratings are within a 0.5% range; and the percent impedance on the same kVA base is within a ±7.5% range.

Transformers are normally designed for operation at altitudes below 1000 meters (3300 feet). To operate a transformer above 1000 meters, it is necessary to reduce the kVA load and to increase the electrical insulation clearances between energized terminals. Refer to NEMA ST-20 for detailed guidelines.

9. MAINTENANCE AND REPAIR

⚠ WARNING

BEFORE ATTEMPTING REPAIRS, FOLLOW THE INSTRUCTIONS SET FORTH BELOW. DE-ENERGIZE THE TRANSFORMER BEFORE MAKING REPAIRS. FAILURE TO DO SO COULD RESULT IN SEVERE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE.

It is the responsibility of the owner to inspect, maintain and keep the transformer in good repair.

Report all failures during the warranty period to your local sales office prior to repairs. All warranty repairs must be made or approved by the manufacturer.

No intente realizar conexiones no mostradas en la placa de datos. No intente modificaciones o cambio de derivaciones (taps) con el transformador energizado.

Este transformador tipo seco fué construído y probado de acuerdo a normas aplicables A.N.S.I. (American National Standards Institute, E.U.A.)

Las siguientes instrucciones de operación son extractos de esas normas.

⚠ ADVERTENCIA

ES IMPORTANTE SEGUIR LAS RECOMENDACIONES QUE SE MENCIONAN. EL NO ACATARLAS PUEDE RESULTAR EN LESIONES PERSONALES SEVERAS, MUERTE, DAÑO EN PROPIEDAD O REDUCCIÓN DE LA VIDA ÚTIL DEL TRANSFORMADOR.

El máximo sobrevoltaje permitido es 5% sobre el voltaje nominal secundario, a carga (kVA) nominal, con un factor de potencia de al menos 80%. Si el transformador se energiza sin que el secundario esté conectado a una carga, entonces el voltaje aplicado al primario no debe provocar un voltaje secundario mayor al 110% del nominal.

Los transformadores de uso general no están intencionalmente diseñados para soportar sobrecargas contínuas. Para información y orientación sobre la operación de sobrecarga en periodos cortos de tiempo, consulte A.N.S.I. C57.96-01.250.

Los transformadores ventilados dependen completamente del aire circundante para su adecuada ventilación. El ambiente no debe exceder los 40ºC (104ºF) y el promedio de temperatura del aire, en un periodo de 24 horas, no debe exceder los 30ºC (86ºF). Para operación a mayores temperaturas, la carga del transformador se reduce un 0.6% de la potencia nominal en KVA por cada grado sobre 30ºC (86ºF) de ambiente promedio, hasta un máximo de 50ºC (122ºF).

El transformador puede conectarse en paralelo con otros transformadores si: el ángulo de fase es el mismo, la rotación de fase es igual, la relación de vueltas y los voltajes nominales están dentro de un 0.5% del rango, y el porcentaje de impedancia, basado en mismos KVA, está dentro del rango de ± 7.5%.

Los transformadores normalmente se diseñan para operar a altitudes por debajo de 1000 metros (3300 Ft.). Operando sobre 1000m es necesario reducir la carga en KVA e incrementar los claros entre terminales energizadas. Consulte N.E.M.A. ST-20 para más detalles.

9. MANTENIMIENTO Y REPARACION

⚠ ADVERTENCIA

ANTES DE INTENTAR DAR SERVICIO, SIGA LAS INSTRUCCIONES QUE SE DARÁN. DESENERGICE ESTE EQUIPO ANTES DE TRABAJAR EN ÉL. EL NO HACERLO PUEDE CAUSAR LESIONES PERSONALES SEVERAS, MUERTE O DAÑOS EN PROPIEDAD.

Es responsabilidad del propietario la inspección, mantenimiento y reparación del transformador.

Durante la vigencia de la garantía notifique toda falla a su oficina de ventas antes de reparar. Toda reparación bajo garantía debe ser hecha o aprobada por el fabricante.

Practically no maintenance is required on a dry-type transformer but inspect it periodically as indicated below:

- De-energize transformer.
- Check for any accumulation of dust or dirt on the terminations or vents. If necessary, remove by vacuuming, brushing, or blowing dry air. Special care should be taken when blowing with dry air to prevent further damage to the product or injury to maintenance personnel from flying particles.
- Inspect insulators, terminals, terminal boards, for tracking (discharge), breaks, cracks, or burns. Clean or repair if necessary.
- Check terminal quality and connections, including taps, for tightness. Replace or tighten as necessary.
- Inspect ground connections and ground contact surfaces. Tighten or repair if needed.
- For ventilated designs only, if moisture is evident, the unit should be dried out by placing it in an oven or by blowing heated air over it. The temperature should not exceed 110ºC (230ºF) to prevent damage to installation wiring.
- Inspect the paint finish for scratches or wear. Repair the finish if necessary.

10. SAFETY

The installation, operation and maintenance of a transformer presents numerous potential unsafe conditions, including, but not limited to the following:

- Improper tap changing operation
- Lethal voltages
- Moving machinery
- Heavy components

All applicable safety procedures as OSHA requirements, regional and local safety requirements, safe working practices, and good judgement must be used by personnel when installing, operating, and/or maintaining such equipment.

Unless otherwise stated, failure to adhere to the following could result in severe bodily damage, injury, death, or property damage. Refer to appropriate areas of this instruction book for further instructions.

1. When the transformer is energized, the electrical terminations are at high voltages. Close exposure to these parts could result in death by electrocution.
2. Do not remove case panels and/or doors when the transformer is energized. Do not energize transformer for operation until the panels are properly installed.
3. Improper or inadequate maintenance could result in reduced transformer life, cause personal injury, death, or property damage.

11. DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY

There are no understandings, agreements, representations or warranties, express or implied, including warranties of merchantability

El transformador tipo seco prácticamente no necesita mantenimiento; aún así, acostumbre revisarlo de la manera siguiente:

- Desenergice el transformador.
- Busque polvo y suciedad acumulados en terminales y respiraderos. De ser necesario, remueva con aspiradora, cepillando o soplando aire seco. Se debe tener cuidado especial al soplar aire seco para prevenir posibles daños al producto o al personal con las partículas sueltas.
- Revise quebraduras, quemaduras y fisuras en aislantes, terminales y soportes de terminales. Limpie o repare si es necesario.
- Revise la calidad y firmeza de terminales y contactos, incluyendo los taps. Apriete o reemplace si es necesario.
- Revise conexiones y superficies de contacto a tierra (potencial cero). Limpie, apriete o repare si es necesario.
- Para diseños ventilados solamente, en caso de humedad evidente, la unidad debe ser secada ya sea dentro de un horno o soplando aire caliente. La temperatura no debe exceder 110ºC (230º F) para prevenir daño al alambrado.
- Inspeccione raspaduras o deterioro en el acabado de la pintura exterior del gabinete. Retoque de ser necesario.

10. SEGURIDAD

La instalación, operación y mantenimiento de un transformador presenta numerosas condiciones inseguras, incluyendo entre otras:

- Modificar arreglo de derivaciones (taps) inapropiadamente
- Voltajes mortales
- Equipo en movimiento
- Partes y componentes pesados

Todos los procedimientos de seguridad como los requeridos por O.S.H.A. (Occupational Safety & Health Administration, E.U.A.), instituciones como C.F.E., I.M.S.S. y S.T.P.S. (MEX) u otros aplicables, requerimientos locales y regionales deben ser usados por el personal para instalar y/o dar mantenimiento al equipo, así como también seguir prácticas de seguridad y buen juicio.

A menos que se especifique lo contrario, el no apegarse a lo siguiente puede causar daños y lesiones personales, muerte y daños en propiedad. Vea las secciones apropiadas de este manual para más información.

1. Cuando el transformador está energizado las terminales eléctricas mantienen un alto potencial (voltaje). El exponerse a estas partes puede causar muerte por electrocución.
2. No remueva los páneles o tapas cuando el transformador esté energizado. No energice el transformador sin haber reinstalado dichos elementos.
3. El mantenimiento pobre o inapropiado reduce la vida útil de la unidad, puede causar lesiones personales, muerte o daño a la propiedad.

11. LIMITES EN RESPONSABILIDAD Y GARANTIA

No hay entendimientos, acuerdos, representaciones o garantías, expresas o implícitas, incluyendo garantías de mercadeo o

or fitness for a particular purpose, other than those specifically set out by any existing contract between the parties. Any such contract states the entire obligation of seller, the contents of this document shall not become part of or modify any prior or existing agreement, commitment or relationship.

The information, recommendations, descriptions and safety notations in this document are based on industry experience and judgement with respect to transformers. This information should not be considered to be all inclusive or covering all contingencies. If further information is required the local sales office should be consulted. No warranties express or implied, including warranties of fitness for a particular purpose or merchantability, or warranties arising from course of dealing or usage of trade, are made regarding the information, recommendations, descriptions, and safety notations contained herein. In no event will the manufacturer be responsible to the user in contract, in tort (including negligence), strict liability or otherwise for any special, indirect, incidental or consequential damage or loss whatsoever, including but not limited to damage or loss of use of equipment, plant or power system, cost of capital, loss of profits, or revenues, cost of replacement power, additional expenses in the use of existing power facilities, or claims against the user by its customers resulting from the use of the information, recommendations, descriptions and safety notations contained herein.

adecuación a un propósito particular, mas que aquellas estipuladas en un contrato existente entre las partes. Tal contrato establece toda la obligación del vendedor. El contenido de este instructivo no será parte ni modificará cualquier acuerdo, compromiso o relación previa o existente.

La información, recomendaciones, descripciones y notas de seguridad se basan en la experiencia y el juicio del fabricante en la industria de transformadores. Este instructivo no cubre ni incluye todas las contingencias posibles. Si requiere más información consulte la oficina local de ventas. Ninguna garantía, expresa o implícita, incluyendo garantías de adecuación a un propósito particular o mercadeo, o garantías surgidas de negociaciones o tratos comerciales, se hace concerniente a la información, recomendaciones descripciones y notas de seguridad contenidas aquí. En ningún caso el fabricante será responsable ante el usuario en contrato, por agravio, responsabilidad a terceros o de otra forma, por ningún daño o pérdida especial, indirecta, incidental o consecuente, incluyendo pero no limitado a daño o pérdida en el uso de equipo, sistemas de planta o potencia, costo de capital, pérdida de utilidades o ingresos, costo de reemplazo de potencia, gastos adicionales en el uso de instalaciones de potencia existentes, o reclamos contra el usuario de parte de sus clientes por el uso de la información, recomendaciones, descripciones y notas de seguridad contenidas aquí.

Publication No. I.L. P24836G-591H
November 1999
Printed in Mexico / Z99100

Publicación No. I.L. P24836G-591H
Noviembre 1999
Impreso en México / Z99100

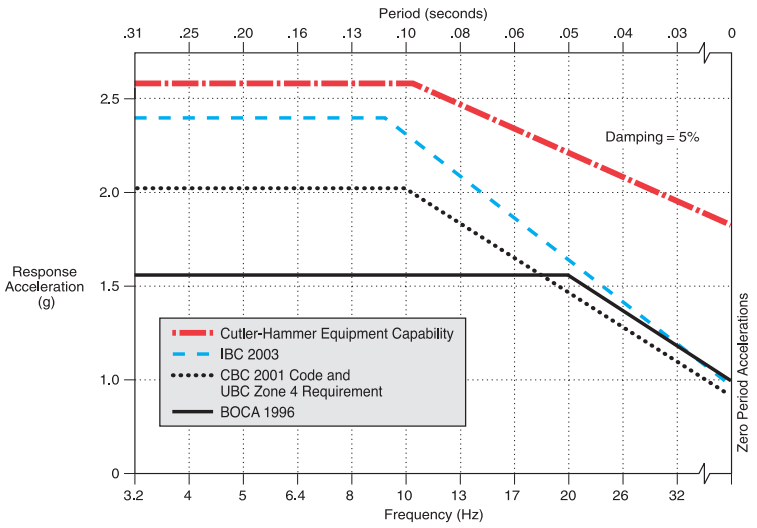
Seismic Information

SEISMIC QUALIFIED

TEST CERTIFICATE OF SEISMIC WITHSTAND CAPABILITY

Eaton's Cutler-Hammer equipment identified below was mounted onto a shake table and tested in accordance with the earthquake requirements as specified in the **Uniform Building Code**, **California Building Code** and the **International Building Code**. As required by the codes, the equipment demonstrated its ability to function after the seismic tests. The seismic capability of the equipment exceeds the worst-case Zone 4 required levels, as illustrated in the figure below.

Dry-Type Distribution Transformers – EP, EPT, DS-3, DT-3



The frequency sweep tests revealed that the lowest equipment natural frequency is:

8.0 Hz

Mostafa A. Ahmed

3RD PARTY TEST ENGINEER IN CHARGE

TESTED BY
Wyle Laboratories
September, 2000

EATON
Cutler-Hammer

For interpretation of testing data refer to Cutler-Hammer Publication SA12501SE

Drawing Number 5676B19H01